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BACKGROUND

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THE JOURNAL

of

THE MEDICAL ASSOCIATION OF THE STATE OF ALABAMA

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Vol. 14 July 1944 No. 1

THE NERVOUS PATIENT

G. O. SEGREST, M. D.
Mobile, Alabama

As I look back on eighteen years of medical practice, I have been surprised at the large number of patients who have consulted me with a long and changing list of symptoms—symptoms too numerous to mention—without organic signs or defects. The different organs of the body were in good order but coordination was poor, and the person was sick in spite of the fact that the different parts of his being were in good repair. The medical profession has been made conscious of organic disease, probably too much so, by medical school teaching, autopsies, and instruments of precision. At the same time, some of the most embarrassing moments of my professional life have occurred when I have momentarily forgotten that so-called neurotic, emotionally unstable and constitutionally inadequate people are subject to infections and organic disease. I well remember two patients with meningitis, in both of whom I missed the diagnosis until late in the disease because both had a typical hysterical reaction. I had seen both of these persons have such reactions to unhappy situations on previous occasions but the last hysteria they ever had was a reaction to a fatal meningeal infection. One of these was a tuberculous meningitis.

Migraine is usually considered a symptom complex of the psychoneurotic, and probably rightly so. One is again faced with the fact that at least a few women get complete relief of their migraine during pregnancy, causing one to suspect that at least a few of these headaches have a hormonal imbalance as an etiologic factor. I have seen a person several times in the last few years who gets a violent, disabling sick headache, lasting six to eight hours, after drinking a glass of sweet milk. Another symptom of the psychoneurotic is a peculiar, dizzy and crazy feeling in the head, and a sense of frustration that prevents clear thinking. I have seen one person in whom the eating of eggs would produce this feeling, indicating allergy as the etiology in some cases of this kind. I saw one patient about two yearse ago and another recently with a complete hemiplegia, lasting from twenty-four to forty-eight hours, after eating food to which they were known to be sensitive. If food allergy could produce hemiplegia of short duration, it certainly could produce dizziness and frustration.

Another common symptom of the nervous, neurotic person is fatigue, this being of a peculiar type out of all proportion to the amount of physical exertion that has been done. As a matter of fact, this so-called fatigue of chronic nervous exhaustion is associated with a complete lack of exercise and is relieved to a great extent by moderate exertion. These persons usually feel more fatigued when they awake in the morning after a good night's sleep than when they go to bed at night after an average day's work. I believe a progressive sense of well being from early morning until bedtime is quite characteristic of a neurosis. I am not unmindful of the constitutionally inadequate person in whom even a usual day's work produces undue physical fatigue. This seems to be quite a different thing from chronic nervous exhaustion. So

Read before the Association in annual session, Montgomery, April 18, 1944.

far as I know, no one has offered any scientific explanation of this type of fatigue, but all are agreed that complete rest in bed aggravates rather than relieves the condition, and that these people should be encouraged to carry on from day to day even if in a limited way. Endurance and bravery are two essentials of a good soldier and many of the medical discharges among soldiers have been attributed to fatigue. Part of this has been due to chronic nervous exhaustion and part to physical fatigue on moderate exertion in the constitutionally inadequate person.

Many of these nervous and emotionally unstable people come again and again complaining of headache, backache, and aches and pains in general throughout the body, a so-called neuritis. I believe it is the opinion of the profession and the population as a whole that an emotional upset, especially if associated with fatigue, can produce a nervous headache but I do not think it is generally considered that this same emotional upset can produce backache and other pains as well. I am not unmindful of headaches produced by organic disease, such as brain tumors, hypertension and sinus disease. I still well remember a patient of mine, a young man, who recently died at the age of twenty-three of a brain tumor diagnosed too late for surgery to be attempted. According to the history, this patient had had typical migraine attacks with cyclic vomiting since early childhood. This history, in my opinion, was a big factor in the late diagnosis. The tumor at first only aggravated the migraine character of his headaches and, as stated in the beginning of this paper, many symptoms of an ever-changing character are one of the outstanding characteristics of the neurotic. The one thing that has caused me more embarrassment than all others is that I seem to be unable to remember that these neurotic people are subject to the same organic diseases as the more stable members of the community, and that these emotionally unstable patients can react hysterically to an organic disease as well as to an unhappy emotional situation.

Coming again to backache, one would be foolish to forget that this type of pain is often produced by organic disease, such as arthritis of the spine, injuries, ruptured intervertebral disks, metastatic malignancies and pelvic disease, but one would be just as foolish to forget that these aches and pains are often produced by emotional upsets. This has been demonstrated in my office time and time again to my complete satisfaction. I do not believe that a displaced uterus is ever the cause of backache. It has always been a mystery to me why a neurotic woman would flaunt a crooked nose in the face of her friends, refusing to have it straightened, and at the same time submit enthusiastically to a major operation for her retroverted uterus that was giving no trouble. When I think of the large number of young married women whom I have seen in my office with a healed postoperative scar in the mid-lower abdomen, the result of a suspension operation, I wonder how long they will continue to suffer many things at the hands of many physicians.

Another sign that I have seen time and time again, especially in the summer, and one that the patient often uses as indisputable evidence of organic disease, is a low grade fever in the afternoon—a temperature between 99 and 100, usually between 99 and 99.5. It seems that emotionally unstable and constitutionally inadequate people are much more likely to have this slight elevation in temperature than the more stable members of the community. I have observed a large number of these people and have been unable to find any explanation for the rise in temperature except the effect of heat on their unstable heat center in the hypothalamus. If heat exhaustion, with no infection or organic disease involved, can produce a temperature of 105 to 106, surely the heat of the South in the summer can produce slight elevation of temperature in susceptible people. I would suggest mild heat exhaustion as the explanation of these low grade fevers rather than incipient tuberculosis, malignancies and undulant fever.

I have often been fascinated by another type of patient, people who have many of the symptoms of hyperthyroidism but who have lost no weight, have a normal or low metabolism, and who are not benefited by a thyroidectomy or Lugol's solution. They have a very definite anxiety neurosis, a rapid and forceful heart action, a low musical systolic murmur heard best at the pulmonic area, often an occasional extrasystole, a

slightly elevated systolic blood pressure, a temperature between 99 and 100, hands that are cold and wet and a distinct tremor of the extended fingers. This is a definite symptom complex and in my opinion is a thing apart unto itself. These people remind me of a person who has just had an overdose of adrenalin, and I often wonder if the suprarenal glands are overactive. And again I wonder, if it is true that the suprarenal gland is overactive, if the anxiety neurosis which is such a prominent part of the picture has caused the suprarenal gland to overact, or if the symptoms associated with an overactive suprarenal gland have produced a neurosis. I have recently seen a very intelligent person of this type and I questioned her at great length and she is of the opinion that her sense of fear preceded her other symptoms.

It has been said that more people come to the physician complaining of symptoms referable to the gastro-intestinal tract than with symptoms referable to any other system. That many of these symptoms are of a functional character has been known too long to be questioned. The symptoms usually complained of by these people are a fullness in the epigastrium after eating, a feeling of emptiness in the epigastrium with some burning when the stomach is empty, a choking sensation in the throat, slight nausea, with a loss of appetite but usually without vomiting, belching, yawning, gas in the lower abdomen, a sense of discomfort along the course of the colon, and constipation alternating with attacks of diarrhea. That organic disease, when found, is often not the cause of such symptoms has been demonstrated time and time again. We all see patients too frequently who continue to have the same discomfort in the right upper abdomen after having a diseased gallbladder removed. About two years ago a patient of mine who had severe colic-like pains in the night in her gallbladder area and a chronically diseased gallbladder had her gallbladder removed. No stones were found. Five days after the operation she began to have her old symptoms all over again. These symptoms continued some three to four months, gradually getting worse. At this time it was called to our attention that the patient's symptoms were due to an irritable gastro-intestinal tract, secondary to a nervous breakdown. It has been impossible for me to differentiate anorexia nervosa from Simmonds's disease, and many of these patients with loss of appetite and slight nausea have been treated by me with pituitary extract and in a few instances with most gratifying results. It has been conservatively estimated that from five to fifteen per cent of the adult population of the United States, depending on the locality, have pathogenic amebae in their colons, these amebae being of the most attenuated forms in a majority of the instances. I have treated many of these people, especially those with gas and discomfort in the lower abdomen, associated with alternating constipation and diarrhea, for amebic dysentery and in some instances with satisfying relief. No one interested in these conditions would want to forget the absence of free hydrochloric acid in the stomach, inanition, especially that associated with chronic alcoholism, subclinical pellagra, pernicious anemia and mild sprue as possible etiologic factors in symptoms referable to the gastro-intestinal tract when no organic disease can be found in that tract.

I have often been fascinated by the similarity of the symptoms of so-called spastic colon and bronchial asthma, and I have seen complete relief of abdominal symptoms of this nature when it had been determined that the patient was sensitive to one or two foods. However, when that patient states, as many do, that they can eat any and all foods one day without discomfort and the next day any and all food gives discomfort, a further attempt at elimination diets is of no use. There have been attempts from time to time to prepare antigens from cultured stools and the paratyphoid B organism has been the organism most commonly mentioned in these studies. This, it seems to me, should be further studied and developed.

Many of the patients with a gastro-intestinal neurosis come to the physician complaining of frequent urination, and some of those that I see have already had many dilatations of the urethra and one or more cystoscopic examinations, often with a diagnosis of stricture of the ureter. In my opinion this is often due to spasticity of the ureter in response to instrumentation in a spasmophilic and an emotionally unstable person.

Quite a number of these have had a major operation for the suspension of a floating right kidney. This operation has again been increasing in popularity. I am sorry to see this, since, in my experience, I have not seen the first operation of this nature that I thought was ever a particular success, and the number of appendices that have been removed in the name of chronic appendicitis is a disgrace that stinks to high heaven. One can usually tell how deep seated the neurosis is by the number of major operations one has been subjected to, and I am of the opinion that if more than two or three major operations have been done the patient is often more psychotic than neurotic. A psychiatrist of this state once wrote me that there is often an invisible line that separates a neurosis from a psychosis.

Probably the second most sensitive organ in the body is the heart and many of these neurotic people come to the physician with symptoms referable to it—symptoms such as palpitation, shortness of breath usually not precipitated by exercise and often relieved by exercise, a sense of tightness in the chest usually associated with strong emotions, extrasystoles and paroxysmal tachycardia, a rapid change of pulse rate and paroxysmal hypertension. These cardiac symptoms can be associated with organic heart disease but are more often seen in the sensitive person with an anxiety neurosis and no organic heart disease. When these symptoms are associated with organic heart disease, they should probably be considered as part of an anxiety neurosis rather than produced by organic disease. I often tell these patients that their heart does not have a chance to behave unless they behave and that their symptoms are a form of behavior rather than an illness as such.

I am convinced that whatever is the cause of the many symptoms in these nervous patients, it is constitutional and irreversible. If any one thing has struck me more forcefully than any other in seeing these people it has been the large number with allergic manifestations, such as frequent colds, hay fever, sinus disease, sensitive throats, asthma, migraine, urticaria, angioneurotic edema and eczemas. Not very well understanding what is behind allergy, I have wondered if the protein sensitization of these patients is a part of their hypersensitivity. These people are so sensitive that they are often continuously upset by the normal and physiologic functions of the body. They see beyond the range of sight; hear beyond the range of hearing, and feel beyond the range of feeling. They remind me of a doctor friend of mine who refused to drive his car if it made any noise. The hum of the engine, which is music to the ears of most men, disturbed him. He kept the mechanics busy trying to eliminate noises that no one could hear but himself. I again often think of these people as having a very narrow comfortable range, a range so narrow that it is impossible to stay out of the rough.

I believe it should be part of every physician's intelligence, if he is to live up to the highest and best of a noble profession—that is, to render the greatest aid to the greatest number and to do the least harm to the fewest number—that he always remember that many symptoms, such as fatigue, slight elevation of temperature, headaches, backache, general body aches and pain, a drawing in the back of the neck, a numb feeling in the hands and feet, a choking sensation in the throat, a heavy feeling in the epigastrium after eating, soreness and discomfort in the abdomen along the course of the colon, with gas, constipation or diarrhea, certain cardiac symptoms, such as palpitation, extrasystoles and paroxysmal tachycardia, all may as often be due to a frustrated mind as to organic disease.

Medical Practice—The fundamental principle in medical practice, as I see the problem, is that the relationship between patient and physician creates obligations, confers privileges and gives rise to responsibilities which are unique in human experience and which are characteristically different from those arising in any other interindividual relationship. Those obligations, privileges and responsibilities are professional in character, that is, they are based, on the one hand, on the competence, the personality and the ethical character of the physician and, on the other hand, on the needs, the personality, the circumstances and the trustfulness of the patient and they must remain inviolate and intrinsically unchanged no matter what the circumstances and pressures might be which would tend to alter their essential character. To be sure, this does not mean that there is not a legitimate place for such forms of medical practice as are implied in public health work nor in certain forms of contract practice assuming certain standards which will safeguard the dignity of the physician as well as of the patient.—*Schwitalla, Connecticut State M. J., June* 1944.

THE TREATMENT OF CRANIOCEREBRAL WOUNDS

COBB PILCHER, M. D.
Nashville, Tennessee

A. INTRODUCTION

In 1918, Harvey Cushing, despite the heavy demands upon his time in the performance of his military surgical duties in France, published two brilliant papers on the treatment of wounds of the brain, summarizing his experience in the first World War up to that time. Falling as they did into a field of wide divergence of opinion and controversy, these papers clearly proved the value of early operation, complete debridement and primary suture in such wounds.

Seventeen years later, after carrying out an extensive experimental study on penetrating wounds of the brain, I came to identical conclusions regarding the treatment of choice in such wounds and added the following suggestions regarding the treatment of foreign bodies:

1. Foreign bodies in the brain which are in communication with the skin, the subarachnoid space or the ventricular system should be removed at the earliest possible moment.
2. Deeply embedded foreign bodies not falling in the category just mentioned should be removed only if focal irritation or destructive symptoms are present.
3. If infection already exists about a superficially placed or protruding foreign body, its removal should be accompanied by the establishment of adequate open drainage.

At the end of his second paper, in 1918, Cushing stated: "There is every reason to believe that by earlier operation and by further improvement in technique . . . the accepted high mortality of cases with dural penetration can be very largely cut down."

If one takes this statement literally, the great pioneer in the field of neurosurgery was wrong, for no one has ever improved upon his operative technique and the basic principles underlying the treatment of penetrating wounds of the brain are identical today with those which he laid down twenty-six years ago. Improvement has indeed taken place, however, through the advent of two great adjuncts to military neurosurgery, but one, electrosurgery, was contributed by Cushing himself, and the other, chemotherapy, cannot be considered as a technical method.

Therefore, any present-day consideration of this important subject must of necessity consist of a repetition of well established principles and the consideration of the application of the new methods, as well as of newer physiologic knowledge regarding wounds in general, to the old problems which Cushing and his contemporaries recognized so well.

The craniocerebral wounds of modern times are by no means all produced by bullets, shrapnel or shell fragments. Patients have their skulls crushed by falling debris from bombed buildings. They are wounded in automobile crashes in black-outs. They poke their heads into revolving airplane propellers or they forget to put on their crash helmets in a wildly plunging tank. This paper, therefore, will include a consideration of all wounds of the head in which the continuity of the skull is disrupted; in other words, of all compound fractures with or without penetrating missiles.

B. DIAGNOSIS

In the great majority of instances the presence of compound wounds of the head is easily recognized. Neurologic examination and x-ray studies add invaluable information. However, a few additional words of caution may be added.

Every apparently simple scalp wound is a potential compound fracture of the skull. Such wounds should not only be carefully treated as though they were of major importance but they should be thoroughly explored for possible underlying fractures and x-ray examination should be made. It is not unusual for high velocity missiles to enter and be lodged in the brain leaving only a minute scalp wound which may easily be overlooked.

The presence of cerebrospinal fluid rhinorrhea or of bleeding or leakage of cerebrospinal fluid from the ear are signs of major

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From the Department of Surgery, Vanderbilt University School of Medicine, Nashville, Tennessee.

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importance since they indicate clearly the presence of a potential pathway for entrance of infection to the central nervous system. Thus, fractures of the base with rupture of the ear drum or fractures involving the paranasal sinuses with tears in the dura must be considered as compound fractures just as much as bursting lesions of the calvarium.

In patients with compound injuries of the head, particularly if the individual is unconscious, it is very easy to overlook serious injuries elsewhere. This is particularly true of fractured cervical vertebrae, an injury which may be of even greater seriousness than the wounds of the brain. Wounds of the thorax and abdomen or severe contusions with visceral hemorrhage in these areas should also be carefully searched for.

C. PRIMARY TREATMENT

Although early operation is of primary importance in these cases, it is of even greater importance that, when operative treatment is carried out, it should be done by a competent neurosurgeon under conditions permitting a complete, careful operative procedure. Sufficient time and adequate equipment (including suction apparatus and an electrosurgical unit) are essential if the operation is to be satisfactorily carried out. A few hours' delay may be much safer than an incomplete and unsatisfactory operation.

Prior to this time of definitive treatment, however, much may be done which will diminish the risk both of fatal outcome and of infection.

The first purpose of first-aid treatment would be the control of hemorrhage. Bleeding from the scalp may almost always be satisfactorily controlled by a tight pressure bandage. Occasionally large vessels in scalp or muscles will require immediate ligature. Bleeding from the brain itself is best temporarily controlled by the application of vaseline gauze (dry gauze should never be applied to brain tissue) superimposed upon which is a firm pressure dressing. Any hemorrhage which cannot be controlled in this simple fashion will in all probability prove fatal before adequate surgical therapy can be instituted.

As soon as possible after the receipt of the wound the surrounding scalp should be shaved. Hair is probably the most dangerous single source of contamination in such wounds. (This is why the Japanese and German armies demand shaven or closely cut heads on their soldiers at all times, an example which our forces might well follow.)

The treatment of shock, if present, is another important early consideration. The administration of plasma, of whole blood or, if they are not available, of intravenous saline or glucose solution is frequently lifesaving. Warm blankets and hot water bottles are beneficial.

Sedation is also of importance since straining or struggling may increase cerebral herniation. Although strong narcotics as a rule are contraindicated in head injuries, small doses of morphine are permissible and even advisable in cases of cerebral wounds, particularly those which require transportation or some considerable delay. Paraldehyde, by rectum, and phenobarbital are also valuable.

Chemotherapy will be discussed more fully later in this paper but it should be said here that all open craniocerebral wounds should be dusted with sulfanilamide powder or crystals when they are first seen. *No other sulfonamides should be used in this way.*

D. TRANSPORTATION

It has been an axiom among neurosurgeons for years that cases of severe head injury tolerate transportation much better before operation than after. Experiences in the present war indicate that only the first half of this statement is true. That is, such cases do tolerate transportation quite well before operation but it has been shown that they also get along surprisingly well if transported immediately after operation. This applies even to airplane transport which was condemned early in the war on account of possible increased herniation resulting from low atmospheric pressure. The satisfactory results of preoperative transportation constitute an additional reason for waiting until adequate personnel and facilities for complete operation are available before definitive treatment is attempted.

The position of the head is of great importance and must be determined entirely by the state of consciousness of the patient. An

individual who is alert and has normal cough reflexes should have his head moderately elevated in order to diminish venous pressure inside the head. On the other hand, a deeply unconscious patient who may be accumulating secretions in his respiratory passages will often be saved by having his head in a dependent position so that such secretions may be drained by gravity.

Needless to say, all possible speed in the transportation of patients with craniocerebral wounds to a point of definitive treatment should be employed.

E. OPERATIVE TREATMENT

As already stated, the time element is of supreme importance. It is true that chemotherapy has permitted the safe passage of a longer interval in many cases than would normally have been permissible. Nevertheless, this in no way alters the fact that all compound fractures of the skull are grave surgical emergencies and should be operated upon at the earliest possible moment. Before the advent of chemotherapy it was generally agreed that the period up to 8 to 12 hours constituted a relatively safe interval during which serious infection would not be likely to develop. Any wound treated after this time would be very likely to become infected. At the present time, however, Ascroft has shown in a carefully studied series of wounds in the North African campaign that such wounds treated with sulfonamides in the very early stages may go as long as 72 hours prior to operation without the development of serious infection.

There is no choice of cases for operation since *all* compound injuries should be operated upon. However, some such cases as already stated may easily be overlooked. Any fracture in the frontal region which involves the posterior wall of the frontal sinus or the ethmoid sinuses and in which the dura is torn, with cerebrospinal fluid rhinorrhea, should be considered a compound injury and operated upon at once. On the other hand, little can be accomplished in those injuries which have cerebrospinal fluid draining from the ear, and these constitute the only exception to the rule of universal operation.

The actual operative considerations may be subdivided as follows:

1. *Cleansing of the Wound*: The skin over a very wide area should be carefully shaved and thoroughly and vigorously scrubbed with green soap and water. Superficial portions of the wound should then be very thoroughly irrigated for a considerable period of time with copious quantities of sterile saline solution. All hair, dirt, fragments of clothing and other foreign materials should be washed away. The skin is then thoroughly swabbed with alcohol but no alcohol is permitted to enter the open wound. These procedures should be carried out before any anesthesia is employed.

2. *Anesthesia*: In a great majority of cases, local anesthesia is preferable. One-half per cent or one per cent procaine should be injected only after superficial cleansing of the wound and may usually be injected into the skin through its incised edges. A wide margin of anesthesia may in this way be provided and it should, of course, include areas of proposed extension of incision.

In patients who are irrational or unmanageable, general anesthesia may be necessary. It is the author's opinion that intratracheal ether is still the anesthetic of choice. However, intravenous pentothal or occasionally avertin by rectum may be very useful.

3. *Incision*: It is not unusual in penetrating wounds of the brain to find a relatively small wound of entrance in the scalp and this requires a considerable enlargement in order that adequate exposure may be secured. Further, the scalp may be badly macerated and may require actual excision of the skin wound. One must be guided by circumstances in such cases and one should never hesitate to enlarge the incision as extensively as may be necessary. In cases in which there has been considerable loss of substance, the tripod or Isle-of-Man incision as outlined by Cushing in 1918 may be necessary. However, the scalp is very freely movable and large amounts may be lost with satisfactory closure.

4. *Debridement of the Superficial Wound*: All macerated or devitalized tissue must be cut away. This includes the margins of the skin, ragged fragments of periosteum which are deprived of their blood supply and small loose bone fragments which have no periosteal attachment. In wounds which are

seen very early large fragments of bone, even though deprived of blood supply, may occasionally be saved with safety and their use may prevent ugly cosmetic results. However, if any doubt whatever as to the presence of infection exists, all such fragments should be discarded. Further superficial irrigation at this stage will often dislodge additional masses of hair or dirt which should be washed away.

5. *Incision of the Dura*: At this stage one must consider the dividing line between those cases in which the dura is lacerated and those in which it is not. In the latter cases it is often a matter of very grave importance for the surgeon to decide whether or not the dura should be opened. I need not say that if there are no neurologic signs and no evidence of advanced intracranial pressure, the intact dura should be unmolested. However, if there is evidence of underlying hemorrhage, if the patient has severe pressure signs, or if there is focal paralysis, the surgeon must use his best judgment in making the decision. Ordinarily the dura should be opened only if there is reasonably conclusive proof that a hematoma underlies the exposed dura.

6. *The Treatment of the Brain in Penetrating Wounds*: If the dura is lacerated, whether by a penetrating foreign body or by bone fragment, there will be a definite tract of injury in the brain. This is often surprisingly narrow and circumscribed.

There is some difference of opinion regarding the wisdom of irrigation of such cerebral wounds. It is my confirmed opinion that gentle irrigation is invaluable in such cases since masses of blood clot, macerated brain tissue and even bone fragments and some foreign bodies may actually be floated to the surface in this manner. The dura should be opened sufficiently widely to gain adequate exposure of the tract, the wound should be irrigated gently and almost continuously for a period of some minutes, and the metal suction tip should be used to evacuate macerated brain tissue, to pick up small fragments of bone and to locate metallic foreign bodies in the depth of the wound. Furthermore, such a suction tip may serve to keep the wound dry while the electrosurgical current is passed down it to coagulate bleeding points. Care must be taken to remove only devitalized brain tissue and not greatly to enlarge the diameter of the tract.

The removal of foreign bodies should be decided according to a simple common sense rule: retained missiles should be removed only when they are easily accessible and when their removal will not greatly increase the damage already done to the brain. Thus, nearly all foreign bodies which have not passed beyond the hemisphere of entrance should be removed but those which have traversed the midline and lie deeply embedded on the opposite side or in the base of the brain should be left severely alone. It is a recognized fact that most missiles are sterile and may cause very little trouble. It is other foreign materials and particularly hair and bone fragments which must be removed as carefully as possible.

The employment of local chemotherapeutic measures will be considered later.

In addition to electrocoagulation and gentle packing with moist cotton pledgets a new and very valuable method of hemostasis has just been developed in the Department of Physical Chemistry at Harvard University under the auspices of the Office of Scientific Research and Development. The first paper on the subject has been published within the past few months by Ingraham and Bailey. This is the use of pledgets of human fibrinogen dipped in a solution of human thrombin and applied directly to the bleeding point. Since it is of human origin and is absorbable it may be left in place. I have had the opportunity of using this material for several months and have found it to be of extremely great value.

7. *The Closure of Dural Defects*: Whenever it is at all possible, dural defects should be completely closed. This is absolutely imperative in defects communicating with the paranasal sinuses, and is important in all cases in which the dura is lacerated.

If there has been much loss of dural substance, defects may frequently be closed by periosteal or fascia lata transplants. Another method formerly popular was the use of preserved animal membrane but this is far from satisfactory.

A new and valuable method is the use of a tough film of human fibrinogen, developed at Harvard at the same time that the fibrin and thrombin preparations described above

were produced. This is a non-irritating absorbable film which serves as a bridge over which a new arachnoido-dural membrane may grow.

8. *The Closure of the Wound*: In many instances simple closure is quite easy but in other cases the greatest ingenuity of the surgeon will be challenged. The tripod and Isle-of-Man incisions have already been mentioned. In other instances, relaxation incisions may allow the sliding of scalp flaps.

9. *Drainage*: All craniocerebral wounds should be closed tightly without drainage unless there is definite evidence of infection already present or unless there is a large dead space communicating with the nasal cavity.

10. *Fractures Through the Paranasal Sinuses*: In these cases, as already mentioned, it is essential that the dura should be tightly closed. The most common site of laceration of the dura is along the cribriform plate where the bone is fractured, has sharp edges and where small lacerations of the dura may easily be overlooked.

Another important consideration is the careful curettement of all mucous membrane from the involved sinus. This will prevent the accumulation of mucoid secretion and often the outpouring of purulent exudate.

11. *Late Infected Cases*: Where there has been unavoidable delay and infection has already developed, careful debridement must still be carried out. There will usually be some herniation of semi-necrotic brain tissue and this should be thoroughly removed. In a few instances it is wise to pack the residual cavity lightly with vaseline gauze packing. Usually, however, a rubber tissue drain brought out through a stab wound distant from the skin incision will be adequate. The skin incision itself should be closed as in the case of early wounds unless there is massive infection with extensive herniation. In such instances it is often necessary to leave the wound wide open.

F. CHEMOTHERAPY

The value of the newer chemotherapeutic measures is enormous. Their use in craniocerebral wounds, as in wounds elsewhere, has undoubtedly saved hundreds or thousands of lives. The very fact of their value, however, has led to their indiscriminate use and to the neglect of sound surgical principles in favor of these more easily employed substitutes. In general, it must be strongly emphasized that chemotherapeutic measures should never be used as a substitute for good surgery but merely as an invaluable adjunct.

For the last two years an extensive experimental progam on the use of chemotherapy in infections of the central nervous system has been carried out under my direction. In these studies a number of observations of practical importance have been made and a few of these may be summarized briefly here:

1. All of the sulfonamides are irritating to the normal brain. The least harmful is sulfanilamide and this is considered by me to be the only sulfonamide which is safe to place in the brain itself.

2. Sulfathiazole, when placed on the normal cortex, causes violent and often fatal convulsions. It should never be used in contact with the brain.

3. Staphylococcal infections of the brain and meninges are markedly benefited by the oral administration of sulfadiazine but not by sulfathiazole.

4. Pneumococcal infections of a similar character show even greater benefits from sulfadiazine administered orally.

5. Both staphylococcal and pneumococcal meningitis are greatly benefited by intrathecal therapy with penicillin. This beneficial effect is increased if the penicillin is also administered intravenously or intramuscularly.

From these observations as well as from clinical studies being made all over the world, a few conclusions regarding chemotherapeutic measures in craniocerebral wounds may be drawn:

1. Sulfathiazole should never be used in contact with the brain.

2. Craniocerebral wounds should be treated locally with sulfanilamide but the amount of this drug is very important since it is by no means completely harmless. Wounds should never be packed with sulfanilamide but should be lightly dusted. A uniform distribution throughout the wound is much more important than a large amount of the drug.

3. Patients with craniocerebral wounds should have sulfadiazine administered intravenously or orally at the earliest possible

moment. This therapy should be continued and an effort should be made to maintain a blood level of the drug between 15 and 25 mgms. per cent. Careful observation of the urine, the temperature curve and the skin should be made in order to discover evidences of toxicity.

Although penicillin is not now generally available for civilian use it is already proving its usefulness in the military field and will undoubtedly eventually prove to have a valuable place in the treatment of these wounds.

G. SUMMARY

The basic principles of the treatment of craniocerebral wounds may be summarized as follows:

1. Simple first-aid and prompt transportation to a point of definitive treatment.
2. Early operation by competent hands with adequate neurosurgical equipment, applying the sound principles of good surgery, namely, thorough cleansing, careful debridement and painstaking closure of dura, galea aponeurotica and scalp.
3. The use of sulfanilamide locally and of sulfadiazine systemically.
4. The intrathecal and systemic administration of penicillin, in military surgery today and civilian surgery tomorrow.

By the application of such principles the morbidity and mortality rates may be kept surprisingly low.

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The author hopes he may be pardoned for largely restricting the bibliography to the following list of his own publications on this subject. Extensive reference to the general literature will be found in these papers. References to a few additional papers, most of which have been published quite recently, follow the list of the author's papers.

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Medical Service in Industry—Far too often we forget that the human body is a machine that is in constant need of repair after it creates power, energy, cerebration and heat. The worn-out parts need the same kind of materials for reconstruction of which they were originally formed. No good workman would expect a machine to function satisfactorily if he repaired a part of tempered steel with wood or retreaded a tire with cotton tape. Just so it is with the human body. Unless our foods contain the essential substance to make repairs, a proper functioning machine cannot be expected. Science has clearly demonstrated that the protective foods contain all the essential things needed to create energy, to make repairs, and to keep the human machine in order. The protective foods that should be in everybody's diet every day are milk, eggs or meat, leafy vegetables, whole wheat or enriched bread, and citrus fruit.—*Heiser, J. Indiana M. A., June* 1944.

SKIN GRAFTING

WITH ESPECIAL REFERENCE TO THE SPLIT THICKNESS SKIN GRAFT

JOHN L. CARMICHAEL
Birmingham, Alabama

Considered from the viewpoint of the historian, skin grafting, like most surgical procedures, is a rather recent development. Isolated instances of the procedure were reported in the first half of the 19th century. In the first decade of the century, Baronio successfully transplanted skin from one side of a sheep's tail to the other. In 1823 Bunger successfully transplanted skin from a woman's thigh to her nose, and in 1843 J. Warren Mason transplanted full thickness skin from the arm to the nose.

General interest in skin grafting seems to have arisen, however, after Reverdin's paper on the subject in 1872. He described a very small skin graft including the full thickness of the epidermis and some of the dermis. His idea was not to cover the entire denuded area but to obtain numerous well distributed small islands of epithelial transplants. The epithelial growth would progress simultaneously from many foci and thus total epithelization would be accomplished much more quickly. In application this graft has been modified to include the full thickness of the dermis in a small central area.

In the 1870's, Wolfe of Scotland and Krause of Germany reported the successful transplanting of free full thickness skin grafts. From these three developments, we have obtained three important types of skin grafts with their names. We have the uniform full thickness graft known as the Wolfe-Krause graft and the uniform split thickness graft known as the Ollier-Thiersch graft. Both of these are intended to cover entirely the denuded area. The Reverdin graft, which, with the above noted modification, has become generally known as the pinch graft, is the third type. This latter graft is not intended to cover the wound entirely but as stated above is expected to start the growth of epithelium simultaneously from many areas.

Read before the February 1944 meeting of the Birmingham Clinical Club, at which lantern slides and motion pictures of cases were shown.

Modifications as to the form of the graft have been proposed, such as the sieve graft of Douglas. Modifications in the application of grafts have also been proposed and used, such as inlay and outlay stent grafts and the tunnel graft.

The pedicle flap type of transplantation of tissue is an honored and useful type of transplantation, the place of which can not in certain circumstances be taken by any type of free graft. This, however, strictly speaking is not a skin graft but a transplantation of skin and subcutaneous tissue.

A rapid increase in the application of skin grafting occurred in the years immediately following World War I. This took place concurrently with and perhaps largely because of the development of the so-called split thickness graft by Blair and Brown and Padgett and others. This development of the application of the split graft and the advent of the sulfonamide drugs have done much to make skin grafting more easily applicable and more successful.

The split thickness graft is essentially an Ollier-Thiersch graft. The particular contribution of Blair and Brown, and more recently of Padgett and others, has been to make the cutting and the application of the graft easier and more successful. Blair and Brown developed the Blair-Brown knife and the suction box to make the cutting of the graft easier and to enable the operator to take the graft from donor areas otherwise unusable.

Recently Padgett developed an ingenuous device, the dermatome, which makes possible the taking of skin from many more donor areas, such as over the ribs, buttocks, etc., and also permits one to cut grafts of a predetermined and uniform thickness. With these devices it is possible to cut from almost any area of the body sheets of graft of less than full skin thickness. This splitting of the skin instead of taking the full thickness permits the rapid epithelization of the donor site and yet provides much of the advantage of a full thickness skin graft.

Much misinformation, and one might say superstition, seems to have arisen in regard to skin grafting from one person to another and from animals to persons. Although successful transplantation of skin from an animal to a human has been reported by several surgeons in the past, it is now generally thought that these reports of success were due to erroneous interpretations of results. Recent attempts by competent surgeons have been universally unsuccessful.

The transplantation of skin from one individual to another seems to be wholly unsuccessful, as far as permanency is concerned, except in the case of identical twins. It is true that such homografts will take and live for a while but eventually the foreign skin is destroyed. This occurs almost always in from three to ten weeks. The chances of take and the length of survival of the graft improve with the nearness of the blood relationships between donor and recipient. For instance, the graft from cousin to cousin is less likely to take and if it does it will be destroyed earlier than the graft from brother to brother. It appears that similarity of blood group has little to do with successful take or length of survival. It is thought that the destruction of the foreign graft is due to an antibody type of reaction. The body apparently builds up immune bodies against the graft as an antigen and the graft is thus destroyed. The reason the graft lives for a time is that the immune bodies are not immediately formed in sufficient concentration to destroy the graft.

Of the three types of grafts mentioned above, the pinch graft is the easiest to cut and apply and is also probably the most certain to take. In the days before the sulfonamides in the infected wounds it was the only sort of graft that would take in a high percentage of cases. These grafts will survive and grow in a moderately infected field. They can be cut and applied under local anesthesia and they do not require any suturing. The disadvantages of this type of graft are several. There is much more contracture of the scar than in the case of the split or full thickness graft. It does not cover the entire wound area and the epithelium between the grafts is the so-called scar epithelium, which is not very resistant to trauma and contains no sweat or oil glands. The cosmetic effect both on the donor and recipient sites is not usually as good as in the other types of grafts. One also can not readily take a second crop of grafts even of the pinch variety from a previous donor area.

The Wolfe-Krause or full thickness graft has several advantages over the other types of grafts. There is much less contracture of the scar beneath this graft. The skin is more resistant to trauma. The cosmetic effect is also better in the sense that the pigmentation remains more nearly as it was before transplantation. This makes the full thickness graft very desirable where applicable in the face and neck regions.

The disadvantages of the full thickness graft are also several. Even under generally favorable conditions there is probably a 20% chance of failure to take and in conditions where there is any infection at all the chances of take are very small. The defect at the donor site must be sutured with resulting scar or the area must be resurfaced with a split thickness graft. No large area can be grafted because only one full thickness graft can be taken from a given area of skin.

Although one has to admit that there is no ideal type of skin graft, that is, no type that has all of the advantages and none of the disadvantages, yet one believes that the split thickness graft has more of the advantages and fewer of the disadvantages than the other types of grafts. It seems that as this graft is used more and more the need for other types of grafts has become progressively less. Less often are full thickness grafts required and less often is there need for pedicle flap transplantation. The split graft takes rather easily in the presence of some infection, especially now that we have the sulfonamide drugs. The contraction of the scar beneath these grafts is less than with the pinch graft, the cosmetic results are much better than with the pinch graft, and are almost as good as with the full thickness graft. The thicker ones hold their pigmentation fairly well. The thicker ones also stand trauma very well. One of the outstanding advantages of this graft is that the patient may grow successive crops of skin in the same area. The disadvantages are as have been implied above. They do not stand trauma as well as the full thickness graft. They take less readily than the

pinch grafts. They do not hold pigmentation as well as the full thickness graft and their application requires general anesthesia (or spinal in some cases) instead of local infiltration anesthesia.

The technique of cutting and applying the split thickness graft is tedious but not especially difficult and is rather easily acquired by anyone with a moderate amount of patience. The preoperative preparation of the patient is of considerable importance, especially in regard to anemia if present. Transfusions increase greatly the chances of a take in the doubtful case. The preparation of the recipient area in the case of open wounds is also of the utmost importance. If the case is one with an open wound, it generally has been treated for a considerable time and dressed with rather indifferent care. These wounds harbor many bacteria that will show considerable virulence if confined beneath a sheet of grafted skin. In the days before the sulfonamides many of the cases developed a pyocyaneus infection that spelled death for the graft. The virulence of these bacteria can be so attenuated with hot wet sulfonamide packs for from four to seven days before operation that little or no infection will show up and the graft will remain alive and thrive. The donor site should be prepared the night before operation by shaving and scrubbing with bland soap and saline solution after which a sterile dressing should be applied. At the time of operation the sterile dressing is removed from the donor site and it is scrubbed with bland soap and saline solution and cleansed with ether. The recipient site is given no preparation except to shave off exuberant granulations and to stop bleeding with hot saline packs.

Depending on the function of the skin in the recipient area and the general condition prevailing at the site, a thick or thin split graft is taken from the donor area. The sheets of graft are placed on moist gauze, not in saline solution, until applied to the wound. After a number of these sufficient to cover the area to be grafted have been cut, they are taken and pressed down on the wound and sutured there by horse hair or fine black silk. A sharp cutting needle is essential for this part of the work. After the suturing is completed it is our custom to sprinkle on a thin coating of sulfonamide powder and then apply a grease dressing. This dressing is covered by several layers of sterile gauze and this in turn by a thick layer of wet sea sponges or dry mechanic's waste. A firm pressure dressing is now applied with rolls of bandage and generous strips of adhesive. This pressure dressing is allowed to remain on for from four to six days and is then removed. The sutures may be taken out at this dressing or left in a day or two longer. The donor site is covered with sterile grease gauze and is not dressed for two weeks, at which time it is usually healed. If enough skin can not be obtained at the first operation to cover the whole wound, one may, in three or four weeks, cut other grafts from the donor areas used previously. After the graft is firmly established the skin thickens slightly and subcutaneous fat is gradually deposited underneath the skin. There is, however, in all cases, but less in the thicker grafts, some contraction of the tissue beneath the graft. The skin is at first tightly adherent to the body tissues but after the subcutaneous fat is deposited becomes looser.

In summary we may say that (1) skin grafting is a rather recently developed surgical procedure; (2) of the three types of skin grafts the split thickness graft has more of the advantages and fewer of the disadvantages than are exhibited by other types of grafts; and (3) the development of new methods of cutting and applying the split thickness graft and the use of the sulfonamides have greatly increased the usefulness of the surgical procedure.

Note: I have drawn heavily from the information contained in the following monographs: Skin Grafting of Burns, by J. Barrett Brown, M. D. and Frank McDowell, M. D., published by J. B. Lippincott Company, 1943; and Skin Grafting by Earl Calvin Padgett, M. D., published by Charles C. Thomas, 1942.

Lymphogranuloma Venereum—Although the constitutional symptoms of lymphogranuloma venereum vary from patient to patient, it is generally believed that they are rarely absent during the stage of invasion of the lymphatic glands. Evidence that the inguinal region is involved is shown by the enlarged lymph nodes. In cases of anorectal involvement, the lesions occur approximately one month after the appearance of the anal discharge. The majority of the cases acquired by venereal exposure appear to be local or limited in nature, devoid of the acute systemic invasion phase.—*Mann, Rhode Island M. J., May* 1944.

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CORONARY ARTERIOSCLEROSIS IN YOUNG SOLDIERS

"Since the beginning of the present war the Army Medical Museum has received protocols and tissues from more than 100 fatal cases of coronary arterial disease in soldiers 20 to 36 years of age. The chief facts concerning 80 such cases in which deaths seemed due to uncomplicated coronary lesions form the basis of this report."

Thus do French and Dock[1] open their discussion of this subject which continues to intrigue and harass the profession.

The investigators go on to tell us that "fifteen soldiers commented on chest pains to their associates a few days or weeks before the final episode but did not report for sick call. . . . Ten soldiers had reported chest pains at sick call; often it was trivial but in several cases coronary disease was 'ruled out' by careful study. Two of these soldiers had pain regularly related to meals and relieved by belching. . . . In summary, in over one-third of the group there were prodromal symptoms suggestive of heart disease."

And we read that "of the 80 patients in this series 39 died suddenly, losing consciousness without complaint of any kind; 7 died in sleep and another awoke with pain and died shortly thereafter. Twenty-four soldiers had a painful seizure of a few minutes duration; 11 of these died suddenly and the rest passed quickly into shock, cyanosis or pulmonary edema."

"Six patients lived for several hours, 3 others for a day or two after the onset of pain."

And we read the following significant paragraph: "That arteriosclerosis of the coronary arteries occurs in young adults, or even before adolescence, is well known. . . . But under the conditions of military life, with its lack of privacy and frequent access to medical examiners and physicians, it is possible to learn more about the story of fatal cases than is true in civil life. In many of these, had death occurred during or after dances, games or other strenuous civilian pursuits, there would have been a coroner's inquest, few would have been closely observed and reported and in many there might not have been an autopsy. The present report is intended only to round out the story of the clinical features of coronary disease which will eventually be told by physicians with the armed forces. At that time the facts here reported can be of value in calculating the total incidence of recognized and fatal cases. Only 1 in 8 of the patients who died survived for an hour or more after the final episode began. Less than half of those who mentioned prodromal symptoms sought professional advice, and only 1 of the 14 whose symptoms might have remotely suggested this condition had received a correct diagnosis and been treated before the fatal attack. Of the 39 with scars in the heart muscle, only 6 had reported at sick call for symptoms which in retrospect may be regarded as cardiac. It seems safe to conclude that in this age group undiagnosed and undiagnosable organic disease due to coronary arteriosclerosis is much more frequent than is recognized."

The authors' conclusions are as follows:

"1. An analysis of the clinical and pathologic features of 80 fatal cases of coronary disease in soldiers aged 20 to 36 revealed that the disease occurred in men of various racial and national origins, showing no predilection for any particular stock.

"2. The most striking presumable predisposing factor was overweight, which was present in 91 per cent of the cases.

1. French, A. J., and Dock, William: Fatal Coronary Arteriosclerosis in Young Soldiers, J. A. M. A. 124: 1233 (April 29) 1944.

"3. Vigorous effort, and the activities of early morning chores, brought on the fatal attacks in over 50 per cent of the cases.

"4. Sudden death, or the onset of the fatal attack, occurred during sleep in 10 per cent of the cases.

"5. The basis of coronary occlusion was found to be arteriosclerosis in all cases. Arteriosclerotic plaques in more than one coronary branch were found to be present in 84 per cent. Definite thrombosis was proved in 36 per cent of the series.

"6. Myocardial scars, indicative of previous insults, were observed in 59 per cent of the cases. Recent myocardial infarction was noted in 19 per cent.

"7. Cardiac hypertrophy of significant degree did not occur in this series."

French and Dock have done well in calling our attention to fatal coronary arteriosclerosis in young soldiers and to the difficulties in correctly diagnosing this condition even in persons under military discipline. Though the number of their cases is not large, it will probably continue to grow as more and more young soldiers are better observed over a longer period of time. And let us remember that the soldiers are picked men, most of the obviously ill and excessively frail young males having been rejected for military service. If fatal coronary artery disease is cropping up in the armed forces, it is certainly reasonable to assume that its incidence is equaled or exceeded among similar age groups in civilian life. The authors are upon firm ground when they point out that it is much more easily overlooked among the latter.

COMMITTEE CONTRIBUTIONS

Cancer Control

HOW DO YOU EXAMINE FOR CANCER?

J. P. Chapman, Chairman
Selma, Ala.

Increasing emphasis is being placed upon careful and complete examination in our campaign for the early recognition of cancer. The public is being told that cancer is curable only when discovered in its earliest stages. In certain visceral cancers the earliest manifestations through disturbed function may not be the first stage of the disease. The public is learning the beginning signs and symptoms of malignancy, and therefore the physician is being consulted whenever there is any indication of trouble. There is great responsibility on the part of the medical consultant to be in sympathy with the anxiety of the patient, as well as recognize himself the evidence presented. The general practitioner should be aware of the possibility of any lesion he can "see" and "feel." If further investigation is needed, the patient should be referred to one prepared for such examinations.

The following routine will enable one to carefully examine a patient who is anxious to know whether or not cancer is present in his body. These rules have been formulated by Dr. Frank E. Adair of the Memorial Hospital in New York.

1. Examine the lips, tongue, cheeks, tonsils and pharynx for persistent ulcerations, the larynx for hoarseness, and the lungs for persistent coughing.

2. Examine the skin of the face, body and extremities for scaly, bleeding warts, black moles and unhealed scars.

3. Examine every woman's breasts for lumps or bleeding nipples.

4. Examine the subcutaneous tissue for lumps on the arms, legs or body.

5. Investigate any symptoms of persistent indigestion, or difficulty in swallowing. Palpate the abdomen.

6. Examine the lymphoid system for enlargement of the nodes of the neck, armpit or groin.

7. Examine the uterus for enlargement, lacerations, bleeding or new growths. Make a bimanual examination to determine the condition of the ovaries. (The cervix has not been adequately examined unless visualized by means of a speculum.)

8. Examine the rectum, and determine the cause of any bleeding or pain.

9. Examine the urine microscopically for blood.

10. Examine the bones and obtain an

x-ray diagnosis of any bone which is the seat of a boring pain, worse at night.

The effect of inadequate examination is tragic. Hasty or superficial examinations give a false sense of security, and further increase the "delay period" before cancer is recognized and treatment is instituted. "Early cancer" and "late cancer" are almost two separate diseases as far as treatment is concerned. Encourage pelvic and breast examinations every six months, and a general examination every year.

STATE DEPARTMENT OF HEALTH

BUREAU OF ADMINISTRATION

B. F. Austin, M. D.
State Health Officer in Charge

REST PROMOTES HEALTH

Donald M. Nelson is the man whose job it is to get the greatest possible amount of work out of the American people. As chairman of the War Production Board, it is his responsibility to see that American workmen turn out every instrument of war-making it is within their power to turn out. From time to time he goes on the radio and gives statements to the newspapers urging all of us to produce, produce, produce. Although the need is less desperate than during the dark days that followed the tragedy of Pearl Harbor, it is still great. And Mr. Nelson does not let any of us forget how great it is or how necessary it is that Tom Jones and Mary Jones on the production front back up G. I. Joe and Jane Joe on the war front.

You might expect this genius of production to be something of a slave-driver, urging people to stay on their jobs under all conditions until the war is over. He is about the last person in the world you would think of as telling people to take vacations and get away from their jobs for a rest. But that is exactly what Donald M. Nelson recently did. In a special message to the leaders of American industry, he asked them not to allow any worker to waive a vacation in order to receive vacation pay as an additional income.

"Such a practice," he said, "would defeat the whole purpose of vacations—increasing production by restoring the worker's energy and zeal."

Another important, though unpublicized, member of the nation's official family recommended for the nation's lawmakers the same sort of escape from the day-to-day routine that Mr. Nelson recommended for the benefit of industrial workers. More than a year ago Dr. George W. Calver, who had been acting as medical advisor to Senators and Representatives for more than a decade, urged them to get away from Washington during the next few months, if possible. Otherwise, he warned, they might endanger their health. His warning, which was directed to other federal employes, as well as to members of Congress, pointed out that some play and relaxation are vitally necessary to good health, and indirectly, to good government as well.

"I hope," he said, "Congress makes some arrangements to get a reasonable vacation this summer. It has been a pretty strenuous session. The war has placed an additional strain on members and that is bad for them."

Although no newspaper references to a similar bit of advice-giving by the Congressional physician this year have been seen, he undoubtedly has repeated his excellent counsel of last year to his charges in private, if not publicly. With the nation now well into its third year of all-out war and with innumerable problems plaguing its officials and people, there is even greater need for it than there was a year or more ago.

There is need, too, for the "ten commandments" of health which Dr. Calver is said to issue every year. They are as follows: (1) Eat wisely. (2) Drink plentifully of water. (3) Eliminate thoroughly. (4) Bathe cleanly. (5) Exercise rationally. (6) Accept inevitables (that is, don't worry). (7) Play enthusiastically. (8) Relax completely. (9) Sleep sufficiently. (10) Check up occasionally.

You may have noted the emphasis upon rest in these health admonitions. Two of the ten deal with some form of escape from the heavy burden of one's day-to-day work. It might even be said that three of the ten

are in advocacy of rest, since to "exercise rationally" is to avoid too much exercise and obtain some rest in between.

Those who marvel at the apparently boundless energy of General George C. Marshall, U. S. Chief of Staff, may wonder how he stands up under such a heavy strain. There was a partial answer to their questioning several months ago in the "Washington Merry-Go-Round" column syndicated nationally under the by-line of Drew Pearson. The writer told how the General and Mrs. Marshall begin their day by having breakfast together at 6:30, the former looking over two newspapers while he sips his breakfast coffee. Then he hurries to his car for the brief drive to his office, which he reaches about 7:30 or 7:45. From then until, in some cases, late at night he is hard at work, except for a brief break in the early afternoon. But that break is important. It is so important, in fact, that he tries not to miss it even when he has brought world-famous officials to lunch with him. I quote from Mr. Pearson's newspaper column:

"They talk as they drive to Fort Myer, and they talk through lunch. But when lunch is over, Mrs. Marshall takes over the talking. The guests may be American, British, Chinese or Dutch. Whatever they are, she entertains them for exactly fifteen minutes, while the General sneaks off to the sunporch on the second floor.

"Maybe the discussion has dealt with staggering news from a battle front. Maybe an error of strategy has been revealed. But when Marshall stretches out on the chaise longue in the corner of the sunporch, the heavy weight of war passes from his mind, and he sleeps. For fifteen minutes he sleeps. It is his salvation."

But the United States Chief of Staff is not the only world-famous figure who believes in rest as a factor in maintaining health and the ability to work under heavy strain. Another member of that company of the rest-respecting great is Prime Minister Winston Churchill. In his autobiography, "My Early Life," he wrote:

"The rest and spell of sleep in the middle of the day refresh the human frame far more than a long night. We were not made by nature to work, or even to play, from 8 o'clock in the morning until midnight. We throw a strain upon our system which is unfair and improvident. For every purpose of business or pleasure, mental or physical, we ought to break our days and our marches in two. When I was at the Admiralty in the war (the first World War) I found I could add nearly two hours to my working effort by going to bed for an hour after luncheon."

The gentleman who occupied in World War I the same high and exacting post which Mr. Churchill occupies in the present war is also a believer in a rest period to break the day's routine. A writer in the London New Statesman and Nation said of David Lloyd George that he "attributes much of his capacity to work long hours and maintain his equanimity, particularly during the strain of the last war, to his habit of always sleeping for an hour after lunch."

The New York Times came out editorially not long ago in favor of more rest on Sundays, not only in the interest of a more proper observance of the Sabbath but also in the interest of restoration of the body and mind and their strengthening for the tasks of the coming week. In wartime especially, the Times editorialist went on, the strain imposed upon the human frame, both mental and physical, is pretty tough from Monday morning until Saturday night, and the matter of getting away from that strain by a wise program of Sunday activities is one that calls for planning in advance, lest the Sabbath Day bring only a continuation of the grind and a bridge of strain connecting one strenuous week with another, without a break.

The Times writer even advocated beginning the Sabbath rest, or comparative rest, well ahead of the Sabbath itself. It should begin, he insisted, on Saturday night. Instead of celebrating the completion of another week's work and perhaps the collection of another week's pay, the thing to do, he went on, is to make the evening before the Sabbath a time of ease-taking. No sitting up late. No strenuous exercise. No going to bed at a late hour with the mind all awhirl with excitement that crowds sleep out for hours. No, the Times editorialist urged, the wise thing to do on Saturday night is to take a leisurely bath and go to bed early.

And on Sunday, he tells us, a person would do well to stay in bed at least one and perhaps two hours longer than during the week. And when one finally gets up he should begin the day's activities unhurriedly. No rushing for the shower (in case he did not take the writer's advice to get that bath the night before). No working one's self up into a mental lather waiting for breakfast, as so often happens on week-days, when the family routine is often tempo'ed to express-

train speed lest one miss the bus and be late for work. No shaving or, in the case of the ladies, no fixing the hair with the attention divided among a dozen things that must be attended to before the day's labors begin. And for that one day of the week, we are told, we should take our time about eating breakfast. For this one morning of the week we should allow plenty of time. No bolting of half-toasted toast. No burning the mouth with bacon and eggs that have not had time to cool. No taking the last sip of coffee on the run. No sacrifice of table manners to haste. No invitations to indigestion from an unwillingness or an inability to take things easy. At least on this one day of the week. For, if you arrange your Sabbath schedule as you should, you will have time for all you need to do on this day without rushing.

One of the things you should do on Sunday of course is to go to church. It is a poor excuse to say that you cannot attend religious services because you need to stay at home and rest. The Times editorial writer, the present writer and a large percentage of the American public agree on that. For one thing, worship itself is restful. The atmosphere of a house of worship is peaceful. The music is inspiring. The people you meet and shake hands with after the services are friendly. The sermon is, or should be, stimulating without making the congregation tense. The Scripture readings take us far from our present troubles and problems and transport us to distant lands and earlier times. Yes, indeed, worship is rest for the body as well as food for the spirit. It makes little difference, as the Times writer says, "whether the sermon is of good or indifferent quality," because "the main thing is to be in church and to depart uplifted."

After returning home from church, that editorialist recommends a good dinner, eaten leisurely, followed by an afternoon with the family, sitting around the fireplace in the living room. "Time seems to stand still," he wrote, "in these Sunday afternoons before the fire with good friends and true." His advice for summer Sunday afternoons undoubtedly would be to gather with the family and friends about the radio and listen to the restful cadences of some of the world's great music.

The rest of the Sabbath should be spent in similarly restful activities or inactivities. In such a peaceful atmosphere the body's storage batteries are recharged. The break with the rest of the week is complete. Both mind and spirit are strengthened for another six-day tussle with the grim business of earning a livelihood. The whole body feels rejuvenated. The danger of cracking under the strain of wartime is diminished.

But, even if one is able and willing to spend Sunday in the manner described, one should not depend upon it to make up entirely for the mistakes and neglects of the rest of the week. Learn to take things easy while on the job, not by loafing and cheating your employer but by striking a happy balance between energy expenditure and work done. Reduce lost motion to the minimum. Keep your disposition on an even keel and do not let little things, or big ones either, "get you down." For, remember, mental restlessness and unhappiness can be as tiring as a brisk walk without doing you the good that a walk probably does. And be especially careful about getting the rest you need when not at work. Budget your leisure hours. Make them count for the most. Make them count especially for good health and the enjoyment of life in its best sense.

In rest there is strength. In rest there is also a defense against many of the tragedies of these strenuous war times.

BUREAU OF COUNTY HEALTH WORK

Douglas L. Cannon, M. D., Director

PUBLIC HEALTH NURSING IN ALABAMA

BULLETIN OF INFORMATION FOR SENIOR CADETS

Contributed by

Pearl Barclay, R. N., Director
Division of Public Health Nursing

Some of the attractions of public health nursing are:

(1) That you learn how people live.

(2) That the work has variety—maternity, child health, communicable diseases, tuberculosis, venereal diseases and the care of crippled children are parts of the program. Then there are the bedside nursing programs for care of the sick in their homes, on the visit basis, industrial nursing, school nursing, etc.

(3) The opportunities for further education are many—scholarships for additional

study in colleges and universities are available.

(4) There are chances for advancement to positions of supervisor and higher levels in county, state and federal agencies.

(5) The civilian population has need of care as well as the military, and public health is classified as an essential service.

There are opportunities in the public health nursing field in both the urban and rural areas in Alabama for senior cadet nurses. The Cullman and Jefferson County Departments of Health are the selected experience areas.

Type of Experience Offered: Public Health activities are designed to provide for mankind a safe environment, protection against disease and better opportunities and incentives for healthful living. The public health nurse applies knowledge acquired from the fields of medicine, sanitation, nutrition, and the social sciences toward the accomplishment of these goals.

For administrative purposes public health activities are divided into the following services: maternity, infants, preschool children, school children, and communicable diseases. The basis upon which public health nursing has been built and the measure of its effectiveness and its value are found in the quality of service which each nurse renders to individuals and families.

The cadet nurse will have an introduction period which will be similar to that given to new graduate nurses who come on the staff. Each nurse is assigned to a local center where the supervisor places her under the guidance of a senior advisory nurse. The senior advisor plans observations for each type of activity and she selects a service load which will insure a well rounded experience during the senior cadet period. Practice will be planned for both field and clinic services.

Participation in the public health nursing activities of the agency provides opportunity for the cadet nurse to:

A. Acquire an understanding of the meaning and scope of public health nursing in an official agency and its relationship to other agencies.

B. Extend her professional knowledge and skills and become more proficient in analyzing family health needs and in helping families solve health and related problems.

C. Develop skill in teaching.

D. Develop skill in recording so that the nursing service will be most helpful to the person served, the organization and the community.

Salary: In conformity with the Bolton Act, $30.00, plus $70.00 to cover the cost of maintenance, will be paid monthly. Approved rooms in private homes are available in Cullman at an average cost of $15.00 per month. Room and meals are from $35.00 to $40.00 a month. That leaves a minimum margin of $30.00 for uniforms and laundry. Students in Birmingham are referred to rooms which are inspected and approved by the Jefferson County Board of Health. Living costs in Birmingham may be a bit higher, but will come well within the $70.00 maintenance allowance.

The cadet provides the regulation public health nursing uniforms. A minimum of three navy blue wash dresses is needed. A detachable white collar is worn. Dresses are made shirtwaist style. Laundry expense is met by the cadet. Traveling expense in line of duty is provided: carfare in the urban areas, and a car with operating costs in the rural areas.

Hours of Work: Service regulations in operation in the county health department will apply to cadets. A forty to forty-four hour week is the rule.

Health: A physical examination is required before a cadet can be accepted for public health nursing experience. This includes a chest x-ray. If desired, this can be secured through the health department. It is required that all students be protected against typhoid and smallpox, for their own safety. Immunity status in regard to diphtheria should also be determined. Expenses for illness, if any, are met by the cadet or the home school.

How to Apply: Application should be made to the director of the school of nursing in which the student is enrolled. Application forms will be filled in by the cadet and the director of the school and mailed to the Public Health Nursing Division, State Department of Health, 519 Dexter Avenue, Montgomery 4, Alabama. Applications will be received at any time. Cadets will be ad-

mitted, as facilities permit, for a six months' period of supervised experience.

Application is not final and does not obligate one. A personal interview will be arranged by the Committee on Selection of Cadets for Public Health Nursing Experience. Everyone concerned is anxious to aid applicants in arriving at an intelligent decision, and to give any further information that may be needed.

Applicants will be cordially welcomed!

BUREAU OF LABORATORIES

Samuel R. Damon, Ph. D., Director

SPECIMENS EXAMINED

MARCH 1944

Examination for diphtheria bacilli and Vincent's	458
Agglutination tests (typhoid, Brill's, undulant fever)	463
Typhoid cultures (blood, feces and urine)	410
Examinations for malaria	622
Examinations for intestinal parasites	2,104
Serologic tests for syphilis (blood and spinal fluid)	36,638
Darkfield examinations	26
Examinations for gonococci	3,419
Examinations for tubercle bacilli	1,826
Examinations for Negri bodies (microscopic)	55
Water examinations (bacteriologic)	1,288
Milk examinations	2,649
Miscellaneous	276
Total	50,234

APRIL 1944

Examination for diphtheria bacilli and Vincent's	380
Agglutination tests (typhoid, Brill's, undulant fever)	491
Typhoid cultures (blood, feces and urine)	487
Examinations for malaria	663
Examinations for intestinal parasites	1,800
Serologic tests for syphilis (blood and spinal fluid)	34,462
Darkfield examinations	19
Examinations for gonococci	3,056
Examinations for tubercle bacilli	1,566
Examinations for Negri bodies (microscopic)	88
Water examinations (bacteriologic)	1,329
Milk examinations	2,365
Miscellaneous	405
Total	47,111

NEXT ANNUAL MEETING
BIRMINGHAM
APRIL 17-19, 1945

BUREAU OF SANITATION

T. H. Milford, M. S. in S. E., Director

LARVICIDES FOR MOSQUITO CONTROL

Contributed by
J. L. Crockett, Jr.
Asso. San. and P. H. Eng.

Elimination of mosquito-breeding waters by drainage or filling is primarily recognized as the most effective means of mosquito control. However, there are instances where, owing to the usage of the body of water, topographic conditions and economic factors, elimination of water by drainage or filling is inadvisable if not impractical. The attack against mosquitoes must then be varied and methods employed that fit the existing conditions. Of the so-called temporary methods of mosquito control, the use of larvicides on the breeding surface has proven the most applicable and satisfactory. These larvicides are toxic to the larval stage of the mosquito, and are generally classified as contact poisons, which kill upon touching the external and certain of the internal tissues of the larvae, and stomach poisons, which must be ingested to exert a toxic effect. In applying the term poison to larvicides used in mosquito control, it should be pointed out that these larvicides are poisonous to mosquito larvae but are not injurious to wild life and animal life in the amounts used for mosquito control.

The larvicides most commonly used for mosquito control are petroleum oils, which are of the contact type. These are sprayed upon the surface of the water forming a film with which the larvae and pupae of mosquitoes come in contact in the process of obtaining oxygen and food. To be effective the oil should spread rapidly, form a relatively stable film, possess a high toxic action within a short period of time, and readily penetrate the breathing tubes of the larvae and pupae. Oils having a low boiling range and high volatility exert a toxic action rapidly but do not form stable films. A non-volatile oil with a high boiling range has a slow toxic action but forms a fairly stable film. The oil used for mosquito control should be a mixture of high and low boiling petroleum fractions. Diesel oils and no. 2 fuel oil have been found to contain these properties and to be quite satisfactory.

A mixture of black oil and kerosene in the ratio of three parts kerosene to one part black oil has also seen general use as a larvicide. This ratio is frequently varied but the amount of kerosene should not be less than the above figure since kerosene is the toxic agent, with black oil serving mainly as an indicator. On small bodies of water and in the shallow portions of large lakes, larvicidal oils are applied by hand, using the knapsack or common fruit tree sprayer. On large lakes, oils can be more economically applied with power-driven equipment. Under average conditions about twenty gallons of oil per acre are required for effective mosquito control. The periodicity of application should be at intervals of seven days during the mosquito-breeding season. The principal advantages of oils are that they are readily available, cheap, can be stored indefinitely, and are effective against the larvae and pupae of both anopheline and culicine mosquitoes. On the other hand, oils require considerable storage space, are messy to handle, and spread poorly in floating debris and in areas heavily invaded by aquatic vegetation.

Other contact poisons infrequently used are pyrethrum-oil emulsion and phenol larvicides. The pyrethrum-oil emulsion is prepared by mixing six gallons of kerosene or light oil containing forty ounces of two per cent pyrethrum extract in light oil with three gallons of water and six ounces of an emulsifying agent such as sodium lauryl sulphate. The emulsifying agent is added to the water and is agitated until a foam begins to form. The light oil containing the pyrethrum extract is then slowly added while continuing the agitation. Violent and sustained agitation is necessary to form a suitable emulsion. The stock solution is then diluted with ten parts of water to one part of the emulsion and is sprayed on the water at the rate of about fifty gallons per acre. The pyrethrum-oil emulsion is not harmful to aquatic vegetation and fish or bird life, acts more rapidly than oil, and is effective against both anophelines and culicines. Its disadvantages are that it quickly loses its toxic effect after spraying, particularly on hot, sunshiny days, has no value on polluted breeding places, the emulsion is difficult to prepare, and pyrethrum is practically unavailable at this time. The chief use of the pyrethrum-oil emulsion is on ornamental pools and in outdoor swimming pools. Phenol larvicides are prepared commercially, and those having a phenol coefficient of ten to fourteen have been found more suitable. Larvicides containing phenol are not generally recommended for mosquito control since the material applied in sufficient quantities to kill mosquito larvae is injurious to fish life.

The only stomach poison commonly used in mosquito control work is Paris green. Paris green (copper acetoarsenite) is applied as a dust after being mixed with an inert material such as soapstone, hydrated lime, road dust, etc. The ratio of Paris green to the diluent varies with the method of application. When hand casting is used, a two per cent mixture (two parts Paris green to ninety-eight parts diluent) has proven effective, whereas the mixture for use in hand blowers and power dusters should be ten per cent and that for dusting from an airplane twenty-five to fifty per cent. On small bodies of water, approximately one pound of Paris green (actual quantity of Paris green in the mixture) per acre of water surface treated is required for satisfactory anopheline control. Where the surface of the water is covered with vegetation, this amount may run as high as two pounds to the acre. For Paris green to be effective as a larvicide it should contain a minimum of fifty per cent arsenious oxide, not more than two and one-half per cent being soluble in water, and at least ninety-five per cent of the material should pass a 325 mesh screen. The principal advantages of Paris green are that it is effective in areas heavily covered with vegetation, may be used to treat areas not readily accessible, and is easy to store and transport. Its disadvantages are that it is poisonous to warm blooded animals and care must be taken in handling the material, has no effect on first stage larvae and pupae, is ineffective against pest mosquitoes, and is difficult to use when high winds prevail.

The purpose of this paper has been to describe the common larvicides used on mosquito control work and to list their advantages and disadvantages. For general mosquito control work in Alabama the petroleum oils (fuel oil and a mixture of kerosene and black oil) are preferred and have proven satisfactory. These require little skill in mixing, are readily obtainable, and are effective against all mosquitoes common to the State.

BUREAU OF VITAL STATISTICS

Ethel R. Hawley, Acting Director

PROVISIONAL MORTALITY STATISTICS

REPORTED BIRTHS, STILLBIRTHS, DEATHS FROM CERTAIN IMPORTANT CAUSES AND RATES*— ALABAMA, MARCH 1944, 1943, 1942

Births, Stillbirths, and Causes of Death	Number of Deaths Registered—March 1944			Rate (Annual Basis)		
	White	Colored	Total	1944	1943	1942
Births (exclusive of stillbirths)	**	**	5805	23.2	26.4	25.3
Stillbirths	**	**	193	32.2	26.9	35.8
Deaths (exclusive of stillbirths)	1177	916	2093	8.4	10.0	10.2
Infant deaths under one year	154	122	276	47.5	52.1	58.7
Infant deaths under one month	93	73	166	28.6	28.0	33.8
Typhoid and paratyphoid 1, 2	1		1	0.4		0.4
Epidemic cerebrospinal meningitis 6	9		9	3.6	2.8	0.8
Scarlet fever 8					0.8	
Whooping cough 9	1	4	5	2.0	6.4	5.3
Diphtheria 10	1		1	0.4	1.6	
Tuberculosis, all forms 13-22	43	55	98	39.2	51.1	47.1
Malaria 28		1	1	0.4	1.6	1.2
Syphilis 30	9	23	32	12.8	12.4	16.0
Influenza 33	35	29	64	25.6	37.2	35.2
Measles 35	13	5	18	7.2		2.4
Poliomyelitis 36						
Encephalitis 37	1		1	0.4	0.4	
Typhus fever 39	2		2	0.8		
Cancer, all forms 45-55	98	44	142	56.7	61.1	66.3
Diabetes mellitus 61	25	10	35	14.0	12.4	14.3
Pellagra 69		3	3	1.2	4.0	7.8
Alcoholism 77	3	1	4	1.6	0.8	2.0
Intracranial lesions 83	110	74	184	73.5	86.3	80.6
Diseases of the heart 90-95	247	156	403	161.0	187.0	183.4
Diseases of the arteries 96-99	8	8	16	6.4	10.8	13.9
Bronchitis 106	2	1	3	1.2	3.6	1.6
Pneumonia, all forms 107-109	75	64	139	55.5	78.3	83.9
Diarrhea and enteritis, (under 2 years) 119	3	3	6	2.4	2.4	5.3
Diarrhea and enteritis (2 years and over) 120		3	3	1.2	1.6	1.6
Appendicitis 121	8	7	15	6.0	7.2	2.4
Hernia, intestinal obstruction 122	10	5	15	6.0	6.8	7.8
Cirrhosis of the liver 124	7	2	9	3.6	6.0	5.3
Nephritis, all forms 130-132	82	92	174	69.5	81.5	83.9
Diseases of the puerperal state 140-150	9	16	25	41.7	38.2	34.3
Puerperal septicemia 140, 142, 147	3	9	12	20.0	10.3	12.5
Suicide 163-164	6		6	2.4	4.4	7.0
Homicide 165-168	3	13	16	6.4	10.0	9.8
Accidental deaths (exclusive of motor vehicle) 169, 171-195	74	27	101	40.4	53.9	58.5
Motor vehicle 170	16	7	23	9.2	13.2	25.8
All other known causes	228	129	357	142.6	144.6	140.4
Ill-defined and unknown causes 199-200	48	134	182	72.7	95.5	99.1

*Birth and death rates are per 1,000 population. Stillbirth rates are per 1,000 total births (live births, plus stillbirths). Rates for diseases of the puerperal state are per 10,000 total births. Infant mortality rates are per 1,000 live births.

**Not available.

BUREAU OF PREVENTABLE DISEASES

D. G. Gill, M. D., Director

PREVALENCE OF COMMUNICABLE DISEASES IN ALABAMA

1944

	March	April	E. E.* April
Typhoid	0	4	7
Typhus	20	20	10
Malaria	84	64	113
Smallpox	0	0	1
Measles	2143	2140	788
Scarlet fever	54	70	47
Whooping cough	133	94	208
Diphtheria	15	34	34
Influenza	679	407	741
Mumps	371	660	282
Poliomyelitis	1	2	2
Encephalitis	0	4	2
Chickenpox	175	188	182
Tetanus	1	6	5
Tuberculosis	205	293	264
Pellagra	2	2	18
Meningitis	43	42	17
Pneumonia	488	502	509
Trachoma	0	0	0
Tularemia	1	5	2
Undulant fever	7	12	2
Denguc	0	1	0
Amebic dysentery	1	3	0
Cancer	140	182	0
Rabies—Human cases	0	0	0
Positive animal heads	16	27	0

As reported by physicians and including deaths not reported as cases.

*E. E.—The estimated expectancy represents the median incidence of the past nine years.

The Bedside Manner—One of the most important characteristics of great men in medicine who have inspired and deserved our admiration and affection is the "bedside manner." The term as used here connotes depth of learning and sincere concern for the patient which is the only sound basis for confidence in a doctor. This "manner" has been and is seen at its best in consultation in the sick room for here the consultant observes meticulous consideration for his fellow practitioner, whose guest he is for the moment. There is nothing finer than this relationship in medicine.

Recently a Washington physician was quoted as saying that something should be done to prevent physicians from suggesting to patients that they have been carelessly or badly treated at the hands of a previous attendant. The implications in this statement are that doctors as a rule are unfair to each other. It can be safely said that rarely does a physician with malice of forethought disparage another practitioner in the presence of a patient. On the other hand, physicians have not always been as diligent as they might be to explain to a patient coming to them from another doctor that a sense of dissatisfaction or distrust may be based on misunderstanding or a faulty evaluation of results. Withholding a judiciously favorable comment of a colleague may really leave a physician open to serious criticism.—*Editorial, Medical Annals of the District of Columbia, May* 1944.

BOOK ABSTRACTS AND REVIEWS

Office Gynecology. By Robert B. Goldblatt, B. A., M. D., C. M., Professor of Experimental Medicine, University of Georgia School of Medicine; Director of Sex Endocrine Clinic, University Hospital, Augusta, Georgia. With a foreword by G. Lombard Kelly, M. D., Dean, University of Georgia School of Medicine. Second edition. Cloth. Price, $4.00 postpaid. Pp. 243 with 48 figures. Springfield, Ill.: Charles C. Thomas, 1944.

This monograph is the second edition of a very compact book which has compressed within its 243 pages an astounding amount of useful clinical information on a difficult subject, which, because of its rapid development, cannot be presented in concrete form. The subject matter is divided into three main groups, which are (1) female endocrinology, (2) hormonology and (3) male endocrinology. The title of the book is misleading for it is not an office endocrinology but rather a monograph on gonadal hormonology. The author's style of writing is pleasant and his brevity of chapters allows for assimilation and digestion of one subject before the introduction of another. Most of the chapters are from 3 to 6 pages in length. The subject matter does not follow a set routine and is presented in a rather haphazard manner.

The text opens with a discussion of the menstrual mechanism as it is accepted today but is sharply followed by a confusing discussion on the development of the ovary. The chapter on the vaginal smear is well written and the procedure as described has been found to be a valuable aid in the diagnosis of the presence or lack of ovarian hormone. This procedure is the scientific way to distinguish between the menopausal syndrome of estrogen deficiency and the pseudo-menopausal syndrome due to psychoneurosis with its associated autonomic imbalance. The diagnostic curettage, even though simple to obtain, should be left in the realm of the experimental gynecologist and not to the practical gynecologist for interpretation. The next five chapters deal with the various menstrual dyscrasias, and after careful perusal the reader cannot help but be impressed as to how much the author is sold on testosterone therapy. Some of us would not agree on the wide usefulness of this chemical substance and particularly on any efficacy it might have on the treatment of fibromyomata of the uterus. The use of testosterone for the treatment of intractable idiopathic micturition sounds very stimulating and will certainly be tried by all of us who have treated this type of frequency with consistently poor results. The chapters termed hormonology will serve as a useful guide for drug selection as the hormones are listed here according to their trade name and that is the way the practitioner has to prescribe his drugs. Pellet therapy, although still unavailable, is included for completeness.

One of the highlights of the volume is the frequent reference the author makes to quotations from the Bible relating to subjects under discussion. There are also many quotations from the legends, particularly as regards the chapter on sterility.

The group of chapters under the heading of male endocrinology include all of the common testicular dysfunctions. The author's results from testosterone therapy again supersede the usual results obtained from this therapy, particularly regarding its efficacy in undescended testicle and male impotence. The use of estrogenic therapy in the male climacteric is received with interest for many of us have already found that in selected cases this drug is of more value than even testosterone which is often disappointing. The testosterone treatment of angina pectoris is rapidly gaining favor and seems to be a useful adjunct. It is stimulating to see that the majority of the many references are up to date.

This book will fulfill a missing gap between the literature put out by the drug houses and the voluminous amount of incomprehensible literature published in medical periodicals. The data presented are from the author's experience and remain open for proof or rejection. Some of his statements will stimulate research and study. This text can be recommended as a "bedside" book to be read a chapter or two at a time just before going to sleep.

P. K. Burwell.

Year Book of Pediatrics, 1943. Edited by Isaac A. Abt, D. Sc., M. D., Professor of Pediatrics, Northwestern University Medical School; Attending Physician, Passavant Hospital; Consulting Physician, Children's Memorial Hospital and St. Luke's Hospital, Chicago; with the collaboration of Arthur F. Abt, B. S., M. D., Associate Professor of Pediatrics, Northwestern University Medical School; Associate Attending Pediatrician, Michael Reese Hospital; Attending Pediatrician, Chicago Maternity Center; Attending Physician, Spaulding School for Crippled Children and La Rabida Jackson Park Sanatorium, Chicago. Cloth. Price, $3.00. Pp. 448. Chicago: The Year Book Publishers, Inc., 1944.

This small volume incorporates a selection of the best articles related to pediatrics which appeared in medical journals during 1943. The scope is complete, giving not only information concerning the disorders of infancy and childhood but also reviews of the various specialties concerning pediatrics.

The editors are capable pediatricians and their notes concerning many of the articles are worthy additions to the volume.

The reviewer feels that by reading this book the general practitioner as well as the specialist may keep abreast of the progress in both the common and rare disorders of infancy and children.

W. A. Daniel, Jr.

The 1943 Year Book of Dermatology and Syphilology. Edited by Marion B. Sulzberger, M. D., Commander, M. C., U. S. N. R., Assistant Clinical Professor of Dermatology and Syphilology, New York Postgraduate Medical School of Columbia University; Member of the American Dermatological Association, Inc., and Assistant Editor Rudolf L. Baer, M. D., Assistant Attending Physician, Skin and Cancer Unit, New York Postgraduate Hospital, Columbia University; Diplomate, American Board

of Dermatology and Syphilology. Cloth. Price, $3.00. Pp. 584. Chicago: The Year Book Publishers, 1944.

This compact book reviews the literature in dermatology and syphilology for the past year.

The book opens with a chapter on "A Guide for the General Practitioner" on skin test and other immunologic procedures in common dermatologic and venereal diseases. This gives the general practitioner a rapid review of the work in this field to date. Some excellent "don'ts" are given and a table on the concentrations and vehicles to be used in patch testing.

Therapy (non-venereal) is then reviewed, with notations by the editors when necessary. With these editorial comments throughout the book, one is not left dangling in the air as to whether the writer of the article has advanced something new, something old or just something.

After reviewing other dermatologic literature, the venereal disease articles are abstracted. Much has been done and written in the venereal disease field during the past year; studies on syphilis incidence amongst draftees, intensive therapy of early syphilis, treatment problems, reactions, other venereal disease, etc. The articles on penicillin had, apparently, not appeared in the literature for review in this Year Book.

The book is one that each doctor doing dermatology or venereal disease control work should have in his library.

W. H. Y. Smith.

Tropical Nursing. A Handbook for Nurses and Others Going Abroad By A. L. Gregg, M. A., M. D., M. Ch., B A. O. (Dublin) D. T. M. and H. (Lond.), L. M. (Rotunda Hospital), Member of Associate Staff of and Lecturer to Nurses at the Hospital for Tropical Diseases, London; Lecturer on Tropical Diseases, Westminster Hospital Medical School. Second edition. Cloth. Price, $3.00. Pp. 185. New York: Philosophical Library, 1944.

Tropical Nursing is a small volume of 185 pages presenting the common tropical diseases and the recommended nursing procedures for each disease. The book is divided into the following five parts: Personal Hygiene in the Tropics, Diseases Techniques, Care of the Eyes, and Glossary.

The reading of this volume should give a nurse contemplating work in the tropics a fair understanding of the special conditions and diseases she will have to combat. One is impressed with the account of the hazards of the tropics, particularly as related to the climate and general lack of proper sanitary provisions. The discussion of the three types of malaria as caused by the three distinct parasites is enlightening and significant to the nurse in noting and reporting symptoms. Section Three on Techniques may provide an interesting review but most nurses are quite familiar with these procedures and if the nurse's scientific preparation has been good she will know how to apply the right principle in individual cases. The reviewer's reaction is that the hazards of the tropics are such that it is best to avoid residence there if possible.

Pearl Barclay.

Practical Malaria Control. A Handbook for Field Workers. By Carl E. M. Gunther, M. D., B. S., D. T. M. (Sydney), Field Medical Officer, Bulolo Gold Dredging Limited, Territory of New Guinea, at present with the Australian Medical Corps. With a foreword by Prof. Harvey Sutton, O. B. E., M. D., F. R. A. C. P., B. Sc., D. P. H., F R. San. I. Cloth. Price, $2.50, Pp. 91. New York: Philosophical Library, 1944.

As indicated by the author in his preface, this handbook is essentially an outline of the practical problems of malaria control in New Guinea and the solutions he found successful during his ten years of experience on that island. This book presents a discussion of antimalarial measures as well as of the diagnosis, treatment and complications of the disease in an interesting manner. It is one of the few texts available in which all phases of malaria control are treated. In discussing antimalaria measures the author confines himself to those applicable in an undeveloped country which are essentially those adaptable to other malarious regions. The physician, engineer and entomologist who study or practice malaria control, particularly in tropical regions, will find this handbook interesting and instructive.

J. L. Crockett, Jr.

Treatment of Surface Burns—At present the most generally approved method of local treatment is the application of bland ointment pressure dressings. Sheets of closely woven gauze impregnated with vaseline are placed over the burned surface. Flat gauze is then applied and next a bulk of mechanic's waste or gauze fluff. This is held in place by a circular gauze bandage firmly applied. The original dressing is not disturbed for a period of from five to ten days, according to conditions. Such a dressing provides a bland covering, a firm protection and adequate drainage. The pressure greatly reduces serum exudation into the tissues and on the surface. It protects the remaining viable epithelium. The advisability and extent of preliminary surgical cleansing depends upon the general as well as the local condition. In the Cocoanut Grove cases at the Massachusetts General Hospital no preliminary cleansing was carried out and the results were excellent. It is necessary to give plasma freely by vein as a great deal is lost in the early stages. A sulfonamide is given systemically primarily for local effect. It has been found to be present in considerable concentration in the serum obtained from the surface blebs. This method of treatment is simple in execution and is giving very good results, particularly in reducing the amount of grafting necessary.

In all cases, regardless of the method of local treatment used, the areas devoid of epithelium should be grafted as soon as possible, preferably within three weeks. Removal of the slough should be hastened by soaks and if necessary by excision. Early grafting preserves function and reduces scarring and contractures. As yet no medication has been discovered to have the property of accelerating epithelial growth and avoiding the necessity of grafting.—*Prioleau, South. Med. & Surg., June* 1944.

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BACKGROUND

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*Romeo, Z. J.: Sulfur and Soap as Effective Prophylaxis Against "Chiggers" (Red Bugs) in the Army, Mil. Surgeon. *90:* 437-439 (April) 1942.

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THE SCHEMM TREATMENT OF CHRONIC HEART FAILURE WITH EDEMA

REPORT OF ILLUSTRATIVE CASE

RANDOLPH LYONS, M. D.
New Orleans

The treatment of chronic congestive heart failure with edema is a problem that not infrequently confronts all clinicians. During the past 10 years, the life expectancy and comfort of the patient with chronic cardiac edema has been considerably improved by a better understanding of the basic physiology of heart failure and the chemistry of edema fluids. One of the most important advances in the therapy of the water-logged patient was the development of the mercurial diuretics. If these diuretics are employed properly, in addition to our time-honored methods, edema may be controlled for many months or even years.

The question of diet in cardiac edema is only too often slighted. Most clinicians agree that, at first, it should be low in calories, moderate in protein content, and low in sodium chloride. There is no conflict of opinion in regard to the restriction of salt. If the patient is undernourished, calories may be added by increasing the carbohydrates and fats. The presence of edema requires further dietary adjustments. The foods should be so selected that their combustion will release as much acid as base. Fortunately, such diets as the familiar Karrell yield an acid ash.

When we come to the question of the fluid intake, the 50-year-old practice of restriction of fluids in edema still holds sway in many quarters (the so-called "dry diet" of edema). Experienced clinicians have for some years realized that restriction of fluids in edematous patients receiving diuretics was not without danger and frequently led to dehydration.

In December 1942 F. R. Schemm[1] described a regimen of high fluid intake in the management of edema, especially cardiac edema. The rationale of his treatment was based upon water-balance studies of Newburgh[2] and his collaborators. Schemm presented 400 cases of advanced disease: 94% with gross heart disease, of which over 200 showed gross edema.

The basis of the Schemm regimen for the clearing of edema fluid is in brief that:

1. Edema fluid is a simple volume increase of the interstitial fluid. It can accumulate and exist only if its materials have been supplied and retained. For each 2 lbs. of edema, these materials consist of about 10 gm. of an alkaline mixture of sodium salts (about 5 parts sodium chloride and 1 part sodium bicarbonate, yielding a pH of 7.4) and 1000 cc. of water as solvent for the salts.

2. This alkaline edema fluid remains indefinitely retained unless the bicarbonate fraction of its sodium salts is used up by the ever-forming metabolic acids or by ingested acids. Acidification excites the kidneys to balance the threat to the pH of the body fluids by elimination of neutral or acid sodium salts or, as often expressed, "acidifica-

*Read before the Association in annual session, Montgomery, April 19, 1944.

1. Schemm, F. R.: High Fluid Intake in Management of Edema, Especially Cardiac Edema; Details and Basis of Regimen, Ann. Int. Med. 17: 952-969 (December) 1942.

2. Newburgh, L. H. and Mackinnon, F.: The Practice of Dietetics. New York, Macmillan, 1934.

tion mobilizes the sodium." As the sodium leaves the body via the kidneys, its water of solution is free: (1) to leave the body as urine, giving weight loss with diuresis; or (2) to leave the body as water vapor, giving weight loss without diuresis; or (3) to remain within the body to remedy body fluid concentration and cell dehydration, giving, by a shift of water to the cells, a disappearance of edema without weight loss or diuresis.

3. The sodium leaves the body via the kidneys as urine and water reaches the kidneys only after all other demands of the body for water are met; therefore sufficient water must be supplied to the body so that enough water will reach the kidneys for the elimination of the sodium. Thus, the kidneys, as "ultimate guardians of the internal environment," are capable of regulating the volume and composition of the internal environment only if they receive enough water, and fail partially or totally in their role of guardian when an inadequate amount of water is available for their use.

From the above, Schemm postulates that the aim of his regimen is to:

1. "Decrease the ingestion of the material essential to the formation of edema, and to encourage the mobilization of sodium already retained by giving a diet restricted in sodium and yielding a neutral or acid ash.

2. "Increase and hasten the normal effect of the metabolic acids by the administration of minimal amounts of acid drugs.

3. "Facilitate elimination of the mobilized sodium via the kidneys and avoid the development of true cellular dehydration by administering plain water in adequate amounts: i.e., adequate according to water balance principles."

Since this paper was published it has received rather scant confirmation in the recent literature. Schroeder[3] in a study of 23 cases of obstinate congestive failure, concluded "that restriction of salt is important in the control of edema of congestive heart failure but that the restriction of fluids is of little value." This cannot be considered as an enthusiastic endorsement of a high fluid intake regimen as recommended by Schemm.

3. Schroeder, H. A.: Studies on Congestive Heart Failure; Importance of Restriction of Salt as Compared to Water, Am. Heart J. 22: 141-153 (August) 1941.

Stead and Warren[4] sound a more optimistic note. They state: "Schemm has published diets which yield an acid ash and contain not more than 0.5 gm. of salt. If this diet is followed strictly, fluids may be given freely." Here again it should be observed that these authors fail to stress the importance of a high fluid intake but state simply that fluids may be given freely, apparently depending on the desire of the patient for fluids.

My observation of the case to be reported and 5 others under present treatment is that a high fluid intake is important and should be insisted upon. Patients should be encouraged to keep careful records of their intake and should not permit them to drop under 3000 ccs. daily.

REPORT OF CASE

Mrs. G. L. is a case of chronic heart disease that I have had under observation for 32 years. The patient is an elderly woman of 71 years. Her past history is irrelevant except for an attack of diphtheria at 20 years, which was very severe and associated with weakness of her legs and paralysis of deglutition. Following this infection she developed a slow heart rate. The etiology is somewhat uncertain but appears to have been due to the diphtheria. She was married at 31 years. When first examined by me in March 1912 she was 38 years old. Her heart was very slightly enlarged to the left and had a slow and slightly irregular rhythm. No murmurs were heard. The blood pressure was 160 and pulse 50.

In 1913, polygraphic tracings were made (no electrocardiogram then) and were shown to Sir James Mackenzie by Dr. J. T. McClymonds of Lexington, Kentucky. Mackenzie's interpretation was "partial heart-block with nodal extrasystoles." This was later confirmed by electrocardiograms.

By 1916 the blood pressure had risen to 200/100. This was considered to be chiefly compensatory for the bradycardia. From this time on, she lived a fairly normal life except that she did not exert herself physically. She had a child without undue difficulty although with much trepidation. She also underwent an operation for hemorrhoids without any complications.

In 1930 she developed auricular fibrillation which has persisted to date.

In 1934 she began to suffer at times with dyspnea and peripheral edema. At this time she was first given salyrgan by vein. During the past 10 years she has occasionally exhibited embolic phenomena due, probably, to the fibrillation, and, with the advent of fibrillation, the heart has gradually increased in size and a systolic murmur has been present at the apex and over the aortic region. These murmurs have been in-

4. Stead, E. A., Jr.: Care of the Patient with Chronic Health Disease, M. Clin. North America 28: 381-387 (March) 1944.

terpreted as being due to aortic dilatation and roughening and a relative mitral insufficiency.

In March 1940 she had an attack of bronchopneumonia and has not been as well since. For the past three years it has been necessary to combat edema by giving mercurial diuretics at closer and closer intervals, so that by the beginning of 1942 she was taking mercupurin either by vein or by suppository every 3 or 4 days. The liver had also enlarged and ascites was present. Her treatment consisted of digitalis, ammonium chloride and courses of decholin plus a salt-poor diet and vitamins. Under this regimen, it was found that she reacted badly, at times, to the mercurials. Following an injection she would have a good diuresis but suffered intense lumbar pains, and there would ensue a period of oliguria for several days, with the urine loaded with casts and some increase in albumen and red blood cells —in spite of the fact that she was encouraged to drink more fluids during the diuretic period. There was no evidence of mercurial poisoning but she apparently suffered from dehydration, kidney irritation and shock. It was now apparent that her cardiorenal system was practically exhausted; I therefore had her admitted to Touro Infirmary on January 22, 1943 in order to safeguard her as much as possible while trying out Schemm's method of treatment.

The physical examination revealed slight orthopnea, mucous membranes slightly cyanosed. Pulse: 48, irregular. Blood pressure 200/75. Heart: much enlarged. Systolic murmurs heard at apex and aortic regions. Bases clear. Abdomen: much distended. Dullness in flanks; slight pedal and sacral edema. Weight 138½ lbs.

Laboratory reports on January 23, 1943: Blood chemistry: total nonprotein nitrogen 43; dextrose 83, CO_2 40; serum proteins 5.92; red blood count 4.1 million; hemoglobin 77%. Venous pressure 260 mms. (saline). Circulation time 30 sec. Urine: 1005, albumen trace, sugar negative, sediment: few hyaline casts. Wassermann negative. E. K. G.: auricular fibrillation with heart block.

Progress of patient in hospital and at home: The Schemm regimen was begun on January 23, 1943 and she remained under observation in the hospital until February 22, 1943. Hospital therapy consisted of: 1. bed rest; 2. initial neutral diet; 3. a fluid intake of 3000 cc. or more daily by mouth; 4. ammonium chloride 4 gms. daily; 5. digitalis 2 cat units daily; 6. mercurial injections given intravenously on 2 occasions to hasten the elimination of edema.

On February 22, 1943 she was discharged from the hospital as improved. Her weight, then, was 133 lbs. Her basal weight-level was considered to be between 130 and 134 lbs. according to the method of Goodman and Corsaro.[5]

On February 24, 1943 her weight was 135 lbs. and she was given 2 cc. of mercupurin intravenously and urged to increase her fluid intake to 3500 cc. or more. On this regimen she went 41 days without a mercurial.

On April 6, 1943 she complained of nocturnal dyspnea, and although her weight was only 132 lbs. she was given 1 cc. of mercupurin intravenously. This injection sufficed until May 2, 1943. At this time, she complained of abdominal swelling (ascites) and some dyspnea. There was also evidence of edema of dependent base. One cc. of mercupurin was injected which carried her until July 5th (62 days).

Since this time, it has become necessary to resort to the mercurials at shorter intervals. She suffered an attack of influenza in the latter part of November 1943 which increased her cardiac failure. During the past two months, mercurials were required about every 10 days.

DISCUSSION OF TREATMENT

The diet is not much more difficult to take than a diabetic diet. Ammonium chloride powder may be used in place of table salt. In addition to this, it is advisable to give moderate doses of ammonium chloride daily as it increases diuresis, especially if the mercurials must be used. If ammonium chloride is not well tolerated, dilute HC1 in small doses (2 to 5 drops in a glass of water every hour) may be substituted. Such medication has the additional advantage of forcing the patient to unconsciously drink more water. Patients with less advanced cardiac disease are frequently able to discontinue the ammonium chloride or dilute HC1. The mercurials are only needed in advanced cases. This patient, during the past 10 years, has had over 200 injections of the mercurials. Very ill patients should start with the initial neutral diet which consists of 6 small feedings. If sufficient fluid cannot be taken orally, intravenous infusions of 5% glucose in distilled water may be supplemented. Under such conditions it is important that the infusion be given slowly (not over 40 drops per minute). Where mercurials are required, it will be found on this regimen that smaller doses (1 cc.) are as effective as larger ones and furthermore post-diuretic oliguria and dehydration do not occur.

SUMMARY

It is not to be expected that any form of therapy will prolong, indefinitely, the life of such a case as described but it is interesting to speculate whether the institution of such a treatment sooner might not have produced still better results. The beneficial effects of this regimen upon this case may be summarized as follows:

1. Better control of edema, as evidenced by the fact that during a period of over 14

5. Goodman, J. I., and Corsaro, J. R.: Basal Weight Level in Treatment of Congestive Heart Failure, Am. Heart J. 26: 338-342 (September) 1943.

months the patient received a total of 25 mercurial injections or an average of 1 injection every 16.84 days, in contrast to an injection every 3 or 4 days previously.

2. On two occasions, she went 41 and 62 days, respectively, without a mercurial, something she had been unable to do for 3 years.

3. The mercurial injections have not been followed by oliguria, dehydration or evidence of renal irritation.

4. A smaller dose of the mercurial, than formerly, was found to be effective.

5. Finally, in view of the results obtained in this case and others under present observation, I believe this regimen is worthy of serious consideration in advanced cardiac disease with edema.

THE MANAGEMENT OF URETERAL CALCULI

AUBREY A. STABLER, M. D.
Greenville, Alabama

ETIOLOGY OF CALCULI

Most ureteral calculi originate in the kidney (bibliographic references 12, 17, 23, 24). The few which originate in the ureter begin in a diverticulum, relaxed area of the ureteral wall, or at a point in the ureter partially obstructed from within or without the ureteral wall (B17, B28).

A calculus begins its growth on a nucleus and proceeds by a process of lamination, layer by layer of urinary salts being deposited on the preceding layer. These laminations may consist chemically of one salt or a mixture of salts (B20).

The theories of the formation of ureteral calculi are as follows: :

A. COLLOID-CRYSTALLOID THEORY

The urinary colloids are thought to hold the urinary crystalloid material in solution in balance (B13, B20, B23, B31). A disturbance of this colloid-crystalloid balance produces a precipitation of urinary salts which make up the chemical contents of urinary calculi (B7, B20). This disturbance of the colloid-crystalloid balance is theoretically caused by several factors:

1. Changes in the amount of colloid, crystalloid, or both (B7, B13, B20).
2. Changes in the hydrogen ion concentration of the urine (B20).
3. Infection in the urine (B20).

B. INFECTION

There are bacilli and cocci which produce a splitting of urea into ammonia and carbon dioxide causing an alkaline urine, as proteus, colon bacilli, certain staphylococci and streptococci (B31). An alkaline urine is productive of calculi. Mayo says to produce a calculus, a specific calculus forming organism must be present; this organism is preceded by a non-specific infection of the kidney, with resulting damage to the renal epithelium and inflammatory exudate (B20). Randall found that fibrous tissue is formed beneath the mucous membrane, which is probably the result of bacterial invasion. Thereby the overlying mucous membrane is destroyed, producing foci for calculus formation (B20).

The pH of the urine in the pelvis of a kidney, in which the urine is infected, often has levels of varying acidity or alkalinity. This variation of pH could possibly be a factor in producing a precipitation of crystalloids.

C. METABOLIC DISTURBANCES

1. Parathyroid glandular disturbance produces a change in calcium and phosphate metabolism (B6, B7, B13, B17).
2. Metabolic disturbance in the catabolism of protein produces a cystinuria (B31).
3. Deficiencies of vitamin A (B17, B19, B23, B31), vitamin B, (B17, B19), vitamin C (B31), and vitamin D (B13, B19, B23) produce changes, all of which are not yet worked out.
4. Chemical disturbances occur in sterile urine—cause unexplained.

D. STASIS

Birdsall has shown the importance of stasis as a factor in the production of renal and ureteral calculi. Stasis is followed by infection and infection produces a change in the chemical make-up of the urine with resulting precipitation of crystalloids. This infection also damages the renal epithelium causing foci for calculus formation. With

infection present the same changes occur as given under infection above (see B).

Fig. 1

Staghorn calculus in right kidney. Another calculus in lower 1/3 of left ureter.

CHEMICAL CONTENT OF URETERAL CALCULI

Stones consist of one or more of the following elements: oxylates, urates, uric acid, calcium, ammonium, magnesium phosphates, calcium carbonates, cystine, xanthine, cholesterin and urosteolith (B20). Staphylococci, proteus, or colon bacilli produce alkaline salts, as calcium phosphates or calcium carbonates (B17). Stones produced in urine in which no infection can be found are usually calcium oxalate, uric acid or cystine (B17).

SYMPTOMS

Pain, hematuria, pyuria, nausea, chills, fever, frequency and anuria. In the series of 100 cases covered by this report all of these symptoms were found.

1. *Pain*: (a) From distention. (b) From spasm. Pain from distention may radiate in any direction from the kidney, often simulating gastro-intestinal and other abdominal disorders and backache. This pain is due to stimulation of the perirenal sympathetics (B20). Pain from spasm may be localized in the region of the kidney, or radiate along the course of the ureter toward the scrotum or toward the thigh. According to Knight (B20) "this radiation of pain is due to the overlapping of the fibers of the renal and spermatic sympathetic plexuses and to the stimulation of the iliolumbar nerve." Pain from spasm is due to spasms of the muscular wall of the ureter and may be present whether the calculus is in motion or not.

2. *Hematuria*: Hematuria may or may not be present. If hematuria is present, it can be gross to microscopic in amount. This symptom is a result of trauma or infection.

3. *Pyuria*: Pyuria results from superimposed infection about the stone or in the kidney.

4. *Nausea, chills, fever*: Nausea, chills and fever result from the toxemia which is present.

5. *Frequency*: Frequency of urination is due to superimposed infection with accompanying irritation of the trigone and urethra. Frequency may also result from referred stimulation through the central nervous system in case of a lower ureteral calculus.

6. *Anuria*: Anuria may be due to bilateral ureteral obstruction, presence of only one kidney with ureteral obstruction, presence of obstuction in one ureter and opposite kidney non-functional, or reflex anuria.

DIAGNOSIS

A. HISTORY

A carefully taken history is of primary importance in diagnosis of ureteral calculi.

1. *Age*: The average age in the series of cases covered by this report is forty-one years. This is in agreement with most other reports. Most stones occur during middle life (B13, B17, B30), between the ages of twenty and sixty. In this series the age groups are as listed below:

1-10 years	0
10-20 years	2
20-30 years	17
30-40 years	31
40-50 years	20
50-60 years	20
60-70 years	8
70-80 years	2

2. *Sex*: In this series there are fifty-seven males and forty-three females.

3. *Symptoms*: Symptoms as given above cover the majority of ureteral calculi. The outstanding symptom of ureteral calculi is sharp pain of spasm, although pain of distention producing a constant pain or aching in the kidney region is fairly frequent in this series. The next most frequent symptom is hematuria, which may be macroscopic or microscopic. Hematuria is probably more frequently microscopic and not noticed by the patient. Less frequent symptoms, such as pyuria, nausea, chills, fever and frequency, result from the presence of infection. Nausea is usually not severe. Chills may be severe to merely chilly sensations. Fever is more often up and down in character reaching fairly high levels—up to 105 degrees, but often dropping to near normal. Frequency may be very annoying, occurring every few minutes in infected cases. Frequency also may occur in non-infected cases when the stone is in the lower one-third of the ureter. Anuria is a rare symptom. One or more of the following symptoms are to be found in occasional cases: general malaise, headache, gastro-intestinal upset, dizziness.

4. *Past History*: A history of previous attacks of ureteral colic or the passing of calculi may help in diagnosis, especially in non-opaque calculi. Information about the area in which a person has lived is of some benefit since calculi are more prevalent in warmer climates (B37) than in cooler ones. History of previous operations or manipulations without relief of pain may lead one to suspect ureteral calculi. Diet is important because some patients give a history of taking excessive alkali, as bicarbonate of soda, etc, or of eating an alkaline diet (though an acid diet does not rule out calculi).

5. Family History: Heredity has been shown to influence the formation of calculi, so it is worth investigating in each patient.

B. PHYSICAL EXAMINATION

Abdominal examination more often than not reveals tenderness either on superficial or deep palpation over the kidney on the side involved. This tenderness is usually due to a distention of the pelvis of the kidney, which is still more pronounced if an infection is present. A mass in the kidney region in case of hydronephrosis and pyonephrosis is not a rare finding. Obstruction of a ureter can produce a very large kidney; some contain as much as a quart or more of fluid. Tenderness along the ureter is sometimes found if the ureter is dilated. Tenderness over the bladder is not frequently found unless infection is present. In some cases there may be hypersensitivity in the region of the scrotum and testicle on the affected side. In female patients a vaginal examination produces valuable information should there be calculi in the lower one-third of the ureter. The calculus can often be palpated by vaginal examination. Rectal examination in males in low ureteral calculus sometimes gives information by finding a point of tenderness at the ureterovesical junction.

C. LABORATORY

Hematuria is often found alone in non-infected cases, and occasionally in infected cases, with complete obstruction on the affected side. Pus is usually present in infected cases. Hydrogen ion variations may cause one to suspect stone, or aid in the diagnosing of the type stone previous to passage.

Fig. 2

K. U. B. Film. Ureteral catheter in right ureter. One calculus in lower 1/3 of right ureter non-opaque to x-ray.

Pus beyond an obstruction in a ureter makes one suspect calculus.

D. X-RAY

A plain film is very important; there were only thirteen cases of this series in which the x-ray failed to show the shadow of the stone. Alyea reports a series of 327 cases with only 1 non-opaque calculus (B2). Most other reports show from 2 to 15 per cent non-opaque calculi. X-ray reveals the location, size and shape of calculi. Plain films in series show the movement of a calculus. Kretschmer gives a good example of such an examination (B21). An intravenous urogram is of great assistance in showing whether the shadow is within or without the ureter. It also excludes foreign bodies and other opaque shadows in the abdomen and pelvis; shows partial or non-functioning kidney; filling defects in cases of non-opaque stones; and reveals kinks and strictures of the ureter. Retrograde urograms with opaque catheters show the relation of the catheter to the stone. Like the intravenous urogram it reveals the amount of dilatation of the pelvis of the kidney and the ureter. It reveals the same as listed above for the intravenous urogram except it does not give any information about the function of the kidney. Horizontal and vertical films should always be taken, whether intravenous or retrograde is used, to show any kinking of the ureter from ptosis of the kidney. It is not without danger to inject opaque solution into a renal pelvis in the presence of ureteral obstruction.

In intravenous urograms no dye can appear in the kidney on the side obstructed by a stone if function is temporarily or permanently lost. If there is drainage by the stone because of spiculated stone, grooved stone, relaxed ureteral wall or the calculus being too small to produce complete obstruction, dye will come through in intravenous urograms.

E. CYSTOSCOPY

Cystoscopy with catheterization often gives the location of a stone by meeting definite obstruction, or by feeling a scratch as the catheter is withdrawn. It also assists in coordination with x-ray and laboratory findings as reported above. In case of soft stones the catheter is sometimes successful in breaking the stone, bringing out pieces with the catheter.

F. KIDNEY FUNCTION

The function of one or both kidneys may be shown reduced through intravenous urogram, indigo carmine, phenolsulphonephthalin tests, urea clearance test, non-protein nitrogen of blood, etc. The reduced function may be due to an obstruction which has been present a short time or over many months. In case of the shorter period, removal of the obstruction probably brings the kidney back to normal function; but in the case of the longer period the kidney probably never regains its entire normal function. The kidney which has its ureter blocked below for a few days may not suffer damage to the kidney tissue, but weeks or months produce kidney damage that cannot be fully repaired. A kidney pelvis above a ureteral stone need not be distended for kidney damage to have already taken place. It is difficult to determine slight damage to kidney function since only a part of the kidney tubules function at any one time. Therefore, a stone blocking the ureter should be removed immediately by manipulation, operation, or a means of drainage as by catheter set-up.

MANAGEMENT

Given a patient with a ureteral stone, there are three methods of approach to recover the offending intruder.

I. Expectant treatment.
II. Manipulation.
III. Open operation.

The method selected is chosen after judging the size, shape, location and number of calculi, condition of patient, condition of kidneys, presence of infection, tolerance to instruments, duration of symptoms, age, sex, and presence or absence of anuria.

I. EXPECTANT TREATMENT

Expectant treatment consists of keeping a close check on the patient or of giving aid by medication and instructions. Some give medication to relieve the peristalsis, as atropine, morphine or other narcotics, and the stone sometimes passes down the ureter. Others give medication as prostigmine 1: 1000 to increase the peristalsis, hoping thereby to push the calculus farther along its way. Still others go back to the simplest treat-

ment of all; give the patient instructions to exercise, and even better still, to take a good ride in a Model T Ford over a cobblestone street, a treatment that not infrequently gives results.

Any reasonable attempt to get the stone to move into the lower one-third of the ureter is worth while, since it oftentimes obviates a major operation if the stone can be removed by manipulation.

If a stone is found to be small enough to pass, opportunity should be given for it to move; a check and recheck by x-ray or cystoscopy will reveal this progress. If it remains stationary, suspicion of being too large, spiculated, or rough with sharp edges should be aroused. There are also possibilities of one or more of the following: a small ureter, stricture, aberrant renal vessels or adhesions which prevent the movement of the stone.

Spontaneous Passage: Spontaneous passage of calculi occurred in twelve of this series of one hundred cases.

11. MANIPULATION

Manipulation, like any other surgical procedure, is worth while if correctly used. Skill in manipulation plays a big part. Even in the most skillful hands it is difficult to be gentle with the ureteral catheters or instruments.

Instruments and Methods Used in Manipulation:

A. *Catheters*

1. The first object in using a catheter is to determine the point of obstruction or partial obstruction within the ureter. In non-opaque calculi it gives the exact location of a calculus if an x-ray of the patient is taken after the catheter is placed.

2. A catheter which passes the stone may be used to relieve the pain immediately by removing the residual urine.

3. A catheter specimen determines the presence or absence of infection above the stone and may be used for drainage of cases in which infection is present above the stone.

4. If a catheter is of fair size, from No. 6 F. up, it aids in dilating the ureter at the point of the calculus.

5. When a catheter is withdrawn after it has passed the stone, it sometimes dislodges an otherwise stationary stone and allows spontaneous passage of the calculus.

Multiple Catheters: Multiple catheters may be passed by stones in the ureter and withdrawn by twisting to extract the calculi. If one or two catheters can be passed by a stone, a stone basket should be used. The multiple catheter method consists of putting several No. 5 catheters well past the stone and then twisting the catheters, withdrawing slowly or with gradual tension over a period of time (B20).

Dilatation: Catheters for dilatation only were used in eighteen cases. In all cases the calculus was passed. Dilatation by catheters is produced by putting one large catheter or multiple catheters by the stone and leaving them for a period of time, usually 12 to 24 hours. Dilatation is also produced by bulb or olive-tipped bougies graduated in size, as Buerger bougie and dilating bulbs, or by dilating instruments, as Lewis's expanding dilator or those by Brown and Stirling. Another method of dilatation is that described by Dourmashkin and Illievitz. They presented bags which when inflated may be used to dilate the ureter. There are other spontaneous dilators as those suggested by Lespinasse and Fillis.

B. *Manipulation With Instruments*

(a.) Johnson Stone Basket: The Johnson stone basket is a metal instrument consisting of a basket of four wires at one end of a flexible metal sheath and on the tip is a flexible filiform. This instrument was used alone successfully in seventeen cases of this series, and was used in combination with forceps, dislodger, or catheter in fourteen other cases, ten of which were successful. A Johnson stone basket is passed through a panendoscope, gently pushed up the ureter, manipulated by the stone; then it is withdrawn with a slow twist clockwise movement to encounter the stone and push it between the wires into the basket. As the basket is withdrawn, the stone is pulled into the cone part of the basket, leaving the central part of the basket to act as a forward dilator of the ureter. If one is unsuccessful in removing the stone, the basket still acts as a very good dilator of the ureter. The Johnson stone basket is not without its dangers:

1. Trauma to the ureteral mucosa. Too rapid twisting will tear the mucosa.

2. In cases with very small ureters there is the danger of rupture.

Fig. 3

Intravenous Urogram. Two calculi in lower 1/3 of right ureter.

Fig. 4

K. U. B. Film. One calculus in pelvis of right kidney, pushed up to pelvis by the stone basket. Johnson Stone Basket in right ureter. Other calculus seen in first picture was removed with the stone basket.

3. If one of the wires should come loose it would penetrate the ureteral wall.

4. There is danger of anti-clockwise twisting which might unscrew the tip.

5. The pressure caused by the basket going over the stone might be sufficient in infected cases to produce rupture of the ureteral wall by the stone.

Another stone basket used is the Councill stone extractor. It works on the same principle as the Johnson, with the exception that it has a metal wire going down the sheath, which expands the basket wires after it is in the ureter.

There is still a third basket, produced by Ferguson, which has the same principle as the two above except that thin, flat, metal strips are used instead of wires.

Other methods of extraction using the principle of dragging the calculus out are as follows:

1. McKay's instrument consists of four threads of Japanese silk attached near the end of a whalebone filiform bougie (B25). When withdrawn, this instrument entangles the stone and pulls it out.

2. Moore suggests that one use McKay's instrument and twist the threads above the calculus before withdrawing (B25).

3. Dourmashkin uses a hook catheter.

4. Joseph uses a spreading catheter.

(b). Forceps: Forceps have a limited place in the removal of ureteral calculi since they can only be used a short distance up the ureter. Cases with small stones located within the intramural portion of the ureter, or one to two centimeters back of the intramural portion, are prospects for forceps. In this series in seven cases stones were removed with forceps alone. In several other cases forceps were used in combination with other instruments, the forceps themselves being unsuccessful.

The danger in using forceps is very great if one is inexperienced:

1. A portion of the mucosa of the ureter can be easily removed with the stone or in the attempt to get the stone when using forceps.

2. The ureter beyond the intramural portion can be easily ruptured with forceps.

(c). Dislodger: The Howard spiral dislodger is an excellent instrument for dislodging calculi within the intramural portion of the ureter. This instrument is used principally in stones that can be seen in the orifice of the ureter; in these cases the coiled end of the instrument is passed over and around the stone in a clockwise direction and enough pressure is used to ease the stone into the bladder. In this series there were two cases in which the dislodger alone was used. It was used in combination with other instruments in several cases; two were successful.

(d). Meatotomy: Meatotomy has to be done in some cases to allow the passage of a calculus through the orifice of the ureter. There are several methods, all of which consist of cutting the orifice by sharp dissection or by fulguration. The latter has been found satisfactory for it produces few complications when properly used. In this series of cases five were done by meatotomy alone, all successfully. Meatotomy was used in several other cases in combination with other instruments. Three of these were not successful. The danger of meatotomy consists of:

1. Going through the bladder wall.

2. Fulgurating too heavily, producing slough and scar tissue.

(e). Combination of Instruments: In this series there were fourteen cases in which a combination of instruments was used. Four were unsuccessful and required open operation, and ten were successful. In this series only multiple catheters, bougies, Johnson stone basket, stone dislodger, forceps and meatotomy were used.

There is much debate and varied opinion on the subject of how large a calculus should be to rule out manipulation as the procedure to be used. A stone larger than 7 mm. should be removed by operation. Of course there are many exceptions to the previous statement; for instance, a large dilated ureter may pass a stone larger than 7 mm. down to the ureteral orifice and even through it. A very small stone in a small ureter may come down no farther than the lumbar region of the ureter. One has to consider the fact that in the presence of infection there is edema in the ureteral wall, which might make for a very small lumen. One must rule out the presence of small fibrous bands, aberrant vessels, kinks, or strictures causing a reduced lumen at some point along the ureter.

A survey of the literature shows that from forty to seventy per cent of ureteral stones find their way to the lower one-third of the ureter (B17). In this series 76 were in the lower one-third of the ureter. One case had a calculus 3½″ in length in the lower one-third of the ureter. This calculus

Fig. 5

Intravenous Urogram. One very large culculus in lower 1/3 of left ureter. Right pyonephrosis and left pyonephrosis.

was not as large as the 7″ calculus that Joly states that he witnessed removed (B17), or the 7″ calculus removed by Dr. Woodman, Royal Hospital, Baghdad (B40). Since such a high percentage of ureteral stones do find their way to the lower one-third of the ureter one should consider whether manipulation can be used successfully or not before attempting major surgery. In this series of

one hundred cases manipulation was used in 63 cases. The total number of manipulations used in the 63 cases were 149—or a little less than 3 to the patient. The number in which one manipulation alone was used was 42, thirty-two of which were successful in removing the stone, or the stone passed immediately afterward. In this group of patients meatotomies were used in fourteen; in five meatotomy alone was successful. The highest number of manipulations in any one patient was eleven, in which case successful removal of the stone on the eleventh try was accomplished.

There is no doubt that some of the sixty-three patients on whom manipulation was used would have passed their stones spontaneously had nothing been done, but since manipulations in our hands have resulted in such few complications we feel that the relief of pain, the shortening of the danger of infection due to stasis, and the economic benefits to the patient in carrying on his duties, makes manipulation worth while in properly chosen cases. Fever and chills following a failure in manipulation do not call for immediate surgery. Manipulation is best done under spinal or intravenous anesthesia. We use procaine in the former and pentothal sodium in the latter.

Summarizing the entire one hundred cases included in this series:

Spontaneous passage	12
Operation only	25
Manipulation failure and operation	4
Manipulation catheter only	18
Manipulation basket only	17
Manipulation forceps only	7
Manipulation dislodger only	2
Manipulation meatotomy only	5
More than 1 of the 5 procedures used	10
	100

Rupture of Ureter

Foulds described eleven cases of rupture of the ureter by stones spontaneously.

Rupture of the ureter is one of the dangers of manipulation, whether with catheters or with instruments. A stone that has ulcerated the wall of the ureter can be pushed through with very little pressure.

Grant reports in routine post-manipulation ureterograms he found four definite instances of extravasation of media. No ill-results in any of the four cases followed. They were in cases in which catheters were used and not instruments. We had no ruptures occur in this series of cases.

III. OPEN OPERATION

Open operation should always be used in case of blockage of the upper one-third of the ureter by a stone that is too large to pass. A small stone in the upper one-third of the ureter that is stationary and produces severe pain or complete obstruction should be removed surgically if it cannot be dislodged by the passage of a catheter. If for

Fig. 6

Retrograde Urogram. One calculus in middle 1/3 of right ureter producing complete blockage.

any reason there is a question of a stone's passing through the orifice without producing damage, located in the lumbar region of the ureter, it should also be removed surgically. In cases in which manipulation fails and there is complete blockage of the ureter, there should not be any great delay in doing an open operation.

A modified S-shaped kidney incision, cutting the muscles for exposure, can be used in approaching a stone by open operation in the upper one-third of the ureter (B4).

In the lumbar region a calculus can be approached with a muscle-splitting incision

so as to give ample exposure if there is any doubt about the exact location of the stone or any doubt about the stone's changing its position. If a stone in the lumbar region is stationary then the non-muscle-splitting operation as described by Foley (B14) is an excellent approach. The Foley incision is an incision through the skin, subcutaneous tissue and fascia to enter between the external oblique muscle and the latissimus dorsi muscle. These two muscles are pulled back exposing the edge of the internal oblique which is also retracted. The lumbodorsal fascia is then incised, and the pararenal fascia dissected by blunt dissection down to the ureter. An incision is made through the fascia and ureteral wall over the stone and the stone extracted. If the incision is a centimeter or more in length it should be closed with a traumatic suture. Closure is then done in layers.

In the lower one-third of the ureter, a mid-line incision can be used for stones about the brim of the pelvis. Lower stones can be approached by the Gibson incision (B4). In high operation a general anesthesia is best used, but in lower operation the spinal is permissible. We use gas-oxygen-ether in general anesthesia, procaine in spinal, and pentothal sodium in intravenous anesthesia.

LOCATION OF CALCULI

In this series there were fifty-six cases of left ureteral calculus and forty of right ureteral calculus. This seems to run true to reports elsewhere that calculi are slightly more prevalent on the left side than on the right. There were four cases (4%) of bilateral calculi which is a slightly higher percentage than found by Jeanbrau, Bumpus, Scholl and Higgins as reported by Higgins (B17). This makes a total of seventy-five cases of lower ureteral calculi, (Munger reports an exhaustive review of the literature on ureteral calculi, showing that about 75% were found in the lower one-third of the ureter), twelve upper and thirteen middle ureteral calculi.

Location of Calculi

		No.	
Right Ureter	Upper one-third	3	
	Middle one-third	5	40 total in
	Lower one-third	32	right ureter
Left Ureter	Upper one-third	9	56 total in
	Middle one-third	8	left ureter
	Lower one-third	39	
Bilateral			2 right lower and left upper 1/3
			2 right lower and left lower 1/3

Fig. 7

Retrograde Urogram. Catheter in each ureter. One calculus in pelvis of left kidney. Another calculus in lower 1/3 of left ureter.

Those having renal calculi in association with the above ureteral calculi were as follows:

2 right lower ureteral and right renal.
3 left lower ureteral and right renal.
Right and left lower ureteral and right and left renal.
Right lower ureteral left and right renal.
Right middle ureteral and left renal.
Right upper ureteral and right renal and vesical.
Right lower ureteral and left and right renal.
Left middle ureteral and right renal.
Left lower ureteral and left renal.

RECURRENCES

Prevention of Recurrences:

1. *Leave no fragments.* If small fragments are broken off during manipulation or op-

Fig. 8

K. U. B. Film. 3 calculi in lower 1/3 of left ureter. 1 calculus in left kidney, lower calyx. 2 calculi in lower 1/3 of right ureter. 1 calculus in rt. kidney, lower calyx.

eration and the stone is x-ray opaque, an x-ray film should be taken. Should broken off fragments be too small or non-opaque to x-ray, such fragments can usually be detected by passing a catheter up the ureter. A scratching sensation on the catheter is suggestive of a fragment. In most cases a catheter should be placed to the kidney pelvis for drainage for a period of twenty-four to forty-eight hours. This catheter serves to keep the ureter dilated, and allows fragments to be passed after removal. In open operation a small rubber catheter should be passed both down to the bladder and up to the kidney pelvis in order to detect any remaining fragments of stone.

2. *Leave no obstruction.* Should there be any obstruction in the ureter immediately after removal of a stone or should a stricture develop later, such obstruction should be removed as early as possible by a dilatation with catheters and bougies. In an open operation any suspicious obstruction of the ureter should be investigated; vessels, bands, kinks, etc., should be relieved before closing the wound.

3. *Render urine sterile.* Infected urine can be made sterile by oral medication of a drug that is specific for the bacteria found in the patient's urine. In cases of chronic infection or of acute infection that does not respond to oral treatment, lavage of the kidney pelvis should be carried out. Force fluids unless there is some contraindication.

4. *Control pH.* The pH of the urine should be changed and maintained in reaction to the opposite pH in which the stone formed.

5. *Diet.* To control the pH of the urine, an acid ash diet or alkaline ash diet should be given the patient in written form. Such diet should contain the commonly used foods.

6. *Correct endocrine disturbances.* Correction of parathyroid disturbances as well as disturbances of other endocrine glands are of primary importance.

7. *Supplying deficiencies.* Deficiencies of vitamins A, B, C, D, of calcium and phosphates, of certain of the proteins, etc., as well as general dietary deficiencies, influence the formation of stones.

8. *Periodic examination.* Every patient should have a periodic urinary examination. A test for the pH of the urine, and a general examination of the urine. Whenever deemed necessary, x-rays for recurrences should be done.

IMPORTANT POINTS TO BE REMEMBERED IN OPEN OPERATIONS

1. Always immobilize stone to keep it from moving up or down the ureter during the operation.

2. Suture the ureteral incision with a suture that just pulls the ureteral walls together. There should be no changing of the rule of approximating like tissue to like tissue. The mucosa should not be pierced by the needle since the ureter is a dangerous place in which to leave a foreign body like catgut exposed to the urinary salts; these may be deposited, producing another stone. A small incision need not be closed.

3. Close wounds with drainage.

4. The ureter should be explored with a catheter or bougie in both directions after removal of the stone. Exploration is important because a fragment of the stone

may be left, a thick putty mass of pus clot is sometimes present above the stone, strictures of the ureter may be present below the stone, or obstruction due to other causes may be present.

5. A finger in the vagina will often push a stone up to easy reach in case of lower ureteral stone in females.

6. X-ray at the table.

7. Examine the stone for pieces broken off.

I wish to express my appreciation to Dr. Louis M. Orr of Orlando, Florida for the very kind assistance and use of cases from his records included in this paper. It was written at the time I was associated with Dr. Orr.

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APPENDICITIS AND COMPLICATIONS

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Acute inflammation of the vermiform appendix is one of the most important surgical emergencies because of its frequency, its amenability to treatment, and its danger when treated improperly. Approximately 20,000 deaths occur annually in this country from this condition, 75% of which are preventable. The patients die not of acute appendicitis but of spreading peritonitis. Acute appendicitis is primarily a disease of youth, the average age is 23, with 70% of the cases falling between the ages of ten and thirty. Two dominating factors are responsible largely for the high mortality—delayed hospitalization and laxatives. Bowers reports that 44% of 5,000 cases of appendicitis were found to have some extension beyond the appendix on admission to the hospital. Ochsner reports the astounding figure of 78.7% for a Charity Hospital series. In a series of 1,089 cases from Charity Hospital, New Orleans, the total mortality was 5.3%. Of these, 83% were unruptured on admission; prompt appendectomy was done with a mortality of 0.8%. The mortality in 179 patients with peritonitis at operation was 27.3%. The incidence of perforation in this series was highest at the two extremes of life.

There are two types of acute appendicitis: the inflammatory and the obstructive. Wangensteen and Bowers are of the opinion that most of the cases of inflammatory lesions result from primary obstruction. However, the frequency of appendicitis associated with upper respiratory infection in young individuals can not be overlooked. They are of the opinion that increased intraluminary pressure is of the utmost importance in the production of appendiceal inflammation. They found that an intraluminary pressure of 6-15 cms. of water for 6-18 hours would cause appendiceal inflammation proceeding to gangrene. Bowers states that 80% of the acute appendices develop on an obstructive basis with infection playing a secondary role. Two-thirds of these are due to fecaliths. In the remainder the obstruction may be due to a foreign body, to the anatomic position of the appendix, or to some residue of previous inflammation, such as a polyp, a luminal stricture, or a kink. For the remaining cases no definite organism has been implicated.

PATHOGENESIS

When obstruction occurs, peristalsis is initiated in an attempt to overcome the obstruction. This produces cramp-like pain. Distention of the obstructed viscus results from increased secretion, aided by the action of the bacteria on its contents. Pressure on the sympathetic nerve endings results in steady dull abdominal pain usually referred to the umbilical region. Distention also causes occlusion of the venules, but since the arterioles continue to pump in blood, vascular congestion results. Distention causes reflex nausea and vomiting, and as it progresses the nerve endings are killed by pressure and anoxemia, and the severity of the pain subsides. Thrombosis begins in the smaller veins. Since the blood supply is poorest on the antimesenteric border, infarcts appear there first. When the inflammation reaches the serosal surface, pain is experienced from a peritoneal source, and then rebound tenderness and rigidity can be elicited. The rupture of small vessels produces hemorrhage into the area. The walls distal to the obstruction gradually become thinned out and the mucosa ulcerates. Fever, leukocytosis and a rapid pulse develop as a consequence of absorption of dead tissue products. As necrosis takes place, bacteria invade the tissue. If obstruction is not overcome, perforation occurs through one of the infarcted areas. However, if obstruction is overcome, relief of pain is experienced by the patient.

PATHOLOGY

The pathology of acute appendicitis varies. In the primarily inflammatory lesion there is edema and general thickening of the wall with considerable reaction on the serosa. According to Bowers the primary le-

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sion results from a fecalith obstructing the lumen, with a subsequent denudation of the mucosa, leaving the submucosa with its rich vascular supply exposed. When the process reaches this vascular area, cellular and fluid exudation causes a thickening of the appendiceal wall.

In the obstructive type distention often occurs so rapidly that gangrene and rupture occur before a protective exudate is laid down in the serosa. Rupture is often facilitated and hastened by the administration of enemas and laxatives which cause overdistention and increased intraluminary pressure respectively. The mortality rate from acute appendicitis varies directly with the administration of cathartics.

CLINICAL MANIFESTATIONS

These include abdominal pain, nausea and vomiting, tenderness and rigidity, fever, leukocytosis, rapid pulse, and perhaps constipation or diarrhea.

Abdominal pain usually begins diffuse, or is referred from the splanchnics to the celiac plexus and is most severe in the epigastrium or near the umbilicus. The pain may be steady or colicky—the latter type being suggestive of obstructive appendicitis. Only when the parietal peritoneum becomes involved does the pain localize in the lower right quadrant. Burger and Torbert report 93% of their cases as having localized pain. Bowers reports that 31% of his cases had colicky pain and 56% had constant pain.

Nausea and vomiting are frequent manifestations and usually follow the onset of pain. Bowers reports nausea in 90% of his cases, Burger and Torbert in 64.5% of theirs. Vomiting is encountered less frequently; Bowers reports it in 60% of his cases, Burger and Torbert in 48%. Subsidence of pain may mean the passage of a fecalith, relief of distention, or a gradual numbing of the nerves due to pressure or gangrene.

Bowers reports abdominal tenderness in 95.5% of his cases. A thick omentum covering the appendix can obscure the tenderness. Rectal examination is especially of value in children in determining the presence of tenderness. Rebound tenderness is important, and it indicates peritoneal involvement.

The temperature is usually low (99-101). If the patient has high fever and is not a child, he usually has a complication or else does not have appendicitis.

The pulse usually increases disproportionally to the temperature.

Leukocytosis (10,000-15,000) is usually but not always present and shows an increase in polymorphonuclears. Dr. A. J. Ochsner has stressed the insignificance of the leucocyte count in the presence of other symptoms.

Bizarre manifestations of appendicitis are sometimes seen. Chills indicate thrombosis of the venous radicals. Constipation and diarrhea are sometimes seen. Acute appendicitis in the very young and in the aged is characterized by its atypical manifestations. Due to the large amount of lymphoid tissue in children and the thinness of the appendicular wall, perforation is likely to occur early and proceed to general peritonitis. The underdeveloped omentum in the young and the atrophic, shortened omentum in the aged offer little resistance to a spreading infection. Abdominal pain and tenderness in the aged is frequently less marked than in younger individuals. The arteriosclerotic vessels of the aged appendix make for this extreme of life a disease the signs and symptoms of which are extremely dissimilar to appendicitis in the young adult.

In order to keep the mortality rate low it is essential that the diagnosis be made early so that the viscus can be removed before the process spreads. The mortality is highest at the extremes of life, particularly in the aged, due to the atypical symptomatology and the subtle onset. The grave consequence associated with a missed diagnosis and the low mortality of the operative procedure in the hands of a skilled surgeon justifies operation in all suspicious cases.

DIAGNOSIS

In making a diagnosis of acute appendicitis several conditions must be considered. For a differential diagnosis Elman considers three groups: First, the medical diseases producing acute abdominal pain, which include coronary disease, pneumonia, nephritis, primary peritonitis, amebic dysentery and typhoid fever. In these conditions an operation would be deleterious if not fatal. Second, certain other medical diseases, such as chronic constipation, spastic colitis, salpingitis and pyelitis. In these, operation would be a mistake but would carry no sig-

nificant mortality. Third, the surgical diseases, acute appendicitis, acute cholecystitis, intestinal obstruction, perforated ulcer, and perforated Meckel's diverticulum. In this group a mistaken diagnosis would be of no consequence, provided the surgeon makes an incision which would enable him to correct whatever acute lesion might be present.

Especially prone to be confusing are the following conditions: Acute pelvic inflammatory disease gives a higher leucocyte count, a higher temperature, a faster sedimentation rate, the patient is much sicker, and the tenderness is over and limited to the adnexia. However, if doubt exists, laparotomy is justified, whereupon, if salpingitis is found, closure and conservative therapy should be instituted.

Mesenteric lymphadenitis, especially in children, is often confusing. The leucocyte count and the temperature are usually higher, and the line of tenderness extends upward, along the line of mesenteric attachment from McBurney's point to the upper left quadrant. It should not be forgotten that many of these cases accompany acute appendicitis.

Parasitic infestations, especially of ameba, hookworm and oxyuris, make it advisable to do a stool examination in every suspected case of appendicitis.

Urinary infections and calculi may simulate appendicitis. Conversely, an acute appendix lying on the ureter may give urinary symptoms, even including hematuria.

TREATMENT

The treatment of uncomplicated acute appendicitis is immediate surgery first, last and always. A muscle-splitting incision of the McBurney or the Rockey-Davis type is sufficient to expose most appendices. Since the abdominal wall is more susceptible to infection than the peritoneum, it should be walled off with moist wash cloths before the appendix is removed. There are three methods of handling the stump: simple ligation; ligation and inversion; and inversion without ligation. The latter is the only surgically sound procedure and is advocated by Ochsner and Lilly. With simple ligation the stump is especially prone to blow out. Ligation and inversion mean burying the contaminated ligated stump in a closed cavity, which will give rise to a localized suppurative process and peritonitis if rupture occurs.

After walling the appendix off from the abdominal wall, the mesoappendix is lifted up with a hemostat. It is then clamped, cut and ligated. A purse-string suture is then placed so as to include the intramural branch of the appendicular artery, the loop is tightened to occlude the arterial lumen, and the suture continued around the cecum in the conventional manner. Three Ochsner clamps are then applied to the appendix, the viscus walled off to prevent contamination, and the appendix divided between the two distal clamps. The middle clamp is then removed and the crushed tip of the appendix grasped with a pair of forceps. Traction is made on the fixed end of the purse string and on the opposite side of the cecum by means of forceps. The third clamp is removed and the stump inverted through the purse string. The site of inversion is reinforced by several Lembert sutures over the area by suturing the stump of the mesoappendix over this area.

COMPLICATIONS

When the appendix becomes gangrenous or ruptures, permitting the process to spread beyond the appendix, the case is considered a complication of appendicitis. Unfortunately many cases of acute appendicitis are not seen until a complicating peritonitis has developed. In such cases the peritonitis is the important factor. Many operators sprinkle sulphanilamide powder in the contaminated field. Their results very definitely support the efficacy of such a procedure.

There is considerable controversy over the deferred treatment of peritonitis of appendiceal origin as outlined by the late Dr. A. J. Ochsner. A clear cut definition of his idea is found in his *Handbook of Appendicitis*. He states: "The temperature was 104 F., the pulse 140, abdomen enormously distended; and features pinced. My experience has taught me that when I operated upon patients in approximately this condition, the patient invariably died.

"Some years ago before I had learned to appreciate the treatment I describe, I frequently operated on patients in this condition as a last resort, thinking that this gave them the only possible chance of recovery. Since then I have learned that this case practically never recovered after an operation, if

it is performed while the condition is that in which I found this patient; whereas a very large majority recover if the treatment (delayed) is followed. Let it be stated in the beginning that for the acute unruptured appendix . . . immediate operation is the only form of treatment."

Conservative therapy consists of tiding the patient over the period of profound toxemia and delaying operation until localization and suppuration have occurred. Its rationale is based on the fact that trauma to the peritoneum results in exudation of serum rich in fibrin which if left unmolested will wall off the inflammation, whereas intervention tends to break up the adhesions and disseminate the infection. Nothing requires more careful supervision and greater surgical judgment than the conservative treatment of appendiceal complications. Conservative therapy includes:

1. Placing the gastrointestinal tract at complete rest, giving nothing by mouth.

2. Placing the patient in Fowler's position.

3. Combating the even-associated ileus by (a) inserting an indwelling duodenal catheter, preferably the Miller-Abbott tube; (b) giving morphine to increase the gastrointestinal tone; (c) giving O_2 intranasally for its decompressing effect on the gut; (d) giving large amounts of fluid, 2-4 liters daily, by vein, clysis or rectum—if the urinary output is as much as 1500 cc. per day it may be assumed that enough fluid is being taken; (e) applying heat to the abdomen.

4. Keeping close check on the nonprotein nitrogen, the CO_2 combining power, and the blood chlorides.

5. Examining the patient daily for signs of localization, in (a) the cul-de-sac, (b) the right iliac fossa; (c) the subphrenic space, and (d) the left iliac fossa.

Stanton reports 113 cases with a combined mortality of 17.6%. Thirty-one were treated by immediate operation with 42% mortality. Eighty-two were treated conservatively with a mortality of 8.5%. Also of interest is the fact that the more desperately ill were treated conservatively. Coller and Potter, Guerry, Ochsner, Walker, Adams, Bancroft, Gardener and others have noticed decided drops in mortality by employing conservative therapy and deferred operation in cases complicated by peritonitis.

Elman recommends immediate operation unless the patient is moribund or unless there is definite evidence of localization. In event of the former, conservatism is employed *only* until the patient is properly prepared to withstand the operation. All the other cases are operated on immediately. If the appendix is intact or perforated it is removed. If localization is noted the abdomen is promptly closed and conservative therapy instituted.

The diagnosis of generalized peritonitis can be made by the absence of peristalsis, the presence of rebound tenderness, abdominal distention and bilateral tenderness on rectal examination. But to distinguish between the acute uncomplicated appendix and an early perforated appendix is a difficult problem. This is shown in a report of 75 cases by Arkush and Kosky which were diagnosed preoperatively as having perforation. However, in the laboratory only 32 showed perforation, the others being acutely inflamed but not perforated. Now had conservative therapy been instituted in this series the unruptured appendices would have probably ruptured under the very eyes of the surgeon. Therefore, it seems that if doubt exists a laparotomy is the safest procedure.

Studying the mortality in a series of cases from the standpoint of the interval of time elapsing between the onset of symptoms and the time the patient was seen by the surgeon, Ochsner and Lilly noted that only 4% of those seen within the first 24 hours had perforated. With no time for the peritoneum to prepare itself, these cases are best treated without exception by laparotomy. If the perforation is only four hours old, they still recommend appendectomy. But in patients seen 24-72 hours or more after the onset of symptoms, the mortality was less if they were treated conservatively.

Guerry and McCutcheon employ conservative therapy in some cases of peritonitis but they do not wait for resolution. They drain the area as soon as the process localizes. They consider that waiting is fraught with danger from complications far greater than simple incision and drainage.

Gleaning from the controversial literature it seems that it is best to operate in the following cases: all those with acute unruptured appendices; those with perforated ap-

pendices with spreading peritonitis (to prevent further contamination from the leaking appendix), but only if, or when, the patient is able to withstand the operation; all cases suspicious of peritonitis in children not showing definite signs of localization (because of massive contamination and the short omentum, children are less likely to localize than adults). The cases to be treated conservatively are those with definite signs of localization and those with peritonitis whose life would be jeopardized by the operative procedure. Since the determination of the exact status of the appendix is so difficult to determine from a clinical viewpoint one must agree with A. Ochsner that it is better for the occasional operator to operate as soon as the diagnosis is made.

The question of drainage in ruptured appendicitis is much debated. Most operators prefer to close the abdomen without drainage, except in the grossly contaminated cases, since Dr. John Yates pointed out over forty years ago that drainage of the peritoneal cavity as such is rarely successful. After a few hours one only drains the drain.

The incidence of complications depends upon the extent of infection at the time the surgeon sees the patient, the age of the patient, his previous care, including the use of cathartics, the treatment instituted by the surgeon, the virulence of the organisms, and the resistance of the patient.

Generalized peritonitis following appendectomy, though rare, is responsible for the greatest number of deaths from acute appendicitis. The diagnosis is easy. The patient does not recover well from the operation. The pain prior to the operation persists as dull and diffuse in character, vomiting is invariably present, the abdomen is tympanitic and there are tenderness and rigidity over the whole abdomen. The pulse and the temperature are elevated, and, as a result of hyperpyrexia, inability to take fluids and vomiting, dehydration rapidly ensues.

The treatment consists of placing the patient in Fowler's position, applying heat to the abdomen, giving fluids by clysis, vein or rectum, allowing nothing by mouth, employing gastric lavage and insisting on total abstinence from food.

Ileus is closely associated with and usually the result of peritonitis. It is present in all cases, especially in the diffuse type. Ileus comprises 6-15% of all postoperative complications of appendicitis. It is believed by some that death is not due to the toxemia from the peritonitis itself, but from toxemia from the absorption of toxins from the paralytic, atonic bowel.

Mechanical ileus can develop following peritonitis. In addition to showing signs of peritonitis the patient is unable to pass flatus or stool. Vomiting is at first gastric but later becomes stercoraceous. The abdomen is distended and tympanitic. The diaphragm is elevated so that respiration and circulation are embarrassed. There is increased peristalsis in the proximal loop causing colicky and intermittent pain. In contrast, borborygmi and pain are characteristically absent in adynamic ileus, though it is not uncommon to have adynamic ileus superimposed on mechanical obstruction. An x-ray taken with the patient in the upright position shows various fluid levels due to the large amounts of gas and fluids in the intestinal loops. If the diagnosis is made, the patient should have a laparotomy.

Residual abscesses following diffuse peritonitis are likely to occur in the following places in the following frequency: (1) cul-de-sac, (2) ileocecal region, (3) subphrenic space, (4) left iliac region. The history is typical; following appendicitis, with or without operation, the patient's fever continues, abdominal pain is complained of, the leukocyte count and temperature increase, and tenderness is found in the region of localized infection. Only 25% of residual infections go on to suppuration; the others resolve spontaneously. The patient with a cul-de-sac abscess may have the urgency to urinate or defecate due to bladder or rectal irritation. Diarrhea, with mucus, is commonly observed. The abscess usually appears during the first week, therefore it is important that the patient be examined rectally at least every other day; feeling especially for relaxation of the anal sphincter and bulging into the anterior rectal wall. If an abscess is found, heat should be applied through an Arzburger cannula, following which most infections will clear up. Suppuration is evidenced by continued fever, rise in leukocyte count, and fluctuation and softening in the abscess, comparable to a decayed spot in an apple. If suppuration oc-

curs, the abscess should be aspirated with a syringe to confirm the presence of pus, then a longitudinal incision made along the anterior rectal wall and the abscess opened by blunt forceps, a drainage tube inserted and brought to the outside. Morphine should then be given to prevent defecation for two or three days, after which time the tube will come away with the first bowel movement and it will not be necessary to reinsert it.

Ileocecal infections cause pain, tenderness and muscular rigidity in the lower right quadrant. Conservatism should be tried but if the leukocyte count goes up, the temperature gets hectic, in the presence of a palpable mass, suppuration can be assumed. The abscess should be drained extraperitoneally and the appendix left strictly alone unless it is lying free in the cavity and can be removed without breaking down any of the adhesions.

In subphrenic infections the spaces most frequently involved are the right posterior superior space and the right inferior space. The infection may reach these spaces by extension up the paracolic gutter, by retroperitoneal lymphangitis, as a result of diffuse peritonitis, as a result of multiple liver abscesses, or it may spread upward as a phlegmon without involving the lymphatics.

The diagnosis of subphrenic abscess is difficult. Tenderness over the 12th rib usually precedes pain near the costovertebral angle or in the subcostal region. Pain is often referred to the clavicular region by the phrenic nerve. Patients developing pleurisy following appendicitis should be considered as having a subphrenic abscess until proven otherwise. Decreased diaphragmatic excursions are best observed under the fluoroscope. In the right posterior superior space abscesses, a lateral x-ray shows elevation of the posterior portion of the diaphragm, with obliteration of the posterior costophrenic angle. Anteroposterior x-rays show elevation of the diaphragm and obliteration of the lateral costophrenic angle.

The prognosis is poor in subphrenic space infections. Suppuration can often be prevented by placing the patient in Fowler's position and applying heat to the area. Once suppuration has occurred, drainage must be instituted. This can be done extraserously by resecting the 12th rib and bluntly dissecting the peritoneum from beneath the diaphragm. For anterior located abscesses the same procedure is employed, the incision being made along the costal margin and the peritoneum reflected off the under surface of the diaphragm.

Left sided abscesses are more common in children than in adults due to the shallow cul-de-sac. The symptoms and treatment are the same.

Portal thrombophlebitis is fortunately a rare complication of appendicitis, occurring in from only 0.1-1% of all cases of acute appendicitis. It accounts for about 5% of all the patients dying of appendicitis. The clinical manifestations are those of chills and high fever. Undoubtedly the portal system is invaded by the inflammatory process with infected emboli being broken off and carried to the liver, resulting in multiple liver abscesses. If such occurs the prognosis is very poor. The presence of chills in appendicitis is an absolutue indication for immediate operation. The thrombosed vessel should be located and ligated above the clot, if this is possible.

Pain and tenderness in the upper right quadrant accompanied by enlargement of the liver and elevation of the diaphragm should suggest to one the possibility of liver abscesses.

CHRONIC APPENDICITIS

Kahler states that chronic appendicitis or recurrent appendicitis is due to the regression of an acute process which does not go on to rupture or suppuration.

In collecting data (385 cases) on the relative value of operation in cases called chronic appendicitis, Alverez asked the question, "Did the patient ever have one or more attacks of abdominal pain around the navel or in the lower right quadrant, pain severe enough to put him to bed, to keep him awake much of the night, and to cause the attending physician to diagnose or greatly suspect acute appendicitis?" In most of the cases in which, after one or more such attacks, a young person suffered with indigestion, nausea, loss of appetite, abdominal discomfort, toxic feelings, occasional cramps, loss of energy and joy of life, appendectomy worked a decided cure. On the contrary in almost every case without a history of a preceding attack of acute appendicitis, the op-

eration was futile. In fact, 24% of the patients were made worse by the operation.

Of 255 patients who never gave a history of an acute attack, only two were benefited by operation, while 87 of 130 giving a history suggestive of an acute attack were cured.

In the group not having had an acute attack the commonest reason for operation was the type abdominal discomfort often associated with constitutional inadequacy, chronic fatigue, nervous breakdown, or psychopathic makeup. Other common reasons for appendectomy were the presence of peptic ulcer-like symptoms, migraine, functional diarrhea, sensitive colon, nervous regurgitation, gallbladder disease, sore liver, spondylitis, food sensitiveness, renal colic or constipation. Only one patient with these troubles was helped by operation. Therefore, it must be emphasized that appendectomy is not the proper treatment for these conditions.

Apparently it is not possible to diagnose appendicitis by x-ray because 20 cases diagnosed in this manner were operated on without any relief.

From this investigation there appear to be only two indications for interval appendectomy: (1) if the patient has had one or more attacks of what appears to have been acute appendicitis, followed by nausea, indigestion, loss of energy, feelings of toxicity, sore cecum, and abdominal cramps; (2) the appearance of these symptoms in a young person who has previously been well.

In conclusion it may be safely stated that the clinical entity of chronic appendicitis does exist and that some patients are definitely benefited by operation but that it should only be performed after an exhaustive study if the patient fails to reveal any other source of the discomfort.

SUMMARY

This paper contains a review of the incidence, pathogenesis, pathology, clinical manifestations, diagnosis and treatment of acute appendicitis. Emphasis has been placed on the complications of appendicitis and the delayed treatment of appendiceal peritonitis. In conclusion a short consideration is given the question of chronic or recurrent appendicitis.

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Penicillin—Florey summarizes the clinical status of penicillin by stating that present evidence indicates that it is useful: (1) as a preventive of infection in wounds; (2) in the promotion of healing in burns and for ensuring the success of skin grafts; (3) in infections due to sensitive organisms, either chronic or of such severity as to render the prospect of death likely, which have not responded to other forms of treatment; (4) in acute infections due to sensitive organisms; (5) in the rapid curing of gonorrhea, including sulfonamide-resisting cases; (6) in pneumonia, and (7) probably in gas gangrene. More recently penicillin has also been found to be highly effective in syphilis. It has already been established that penicillin resistance may occur, in which case artificial fever may help as an adjunct.

While penicillin is the most dramatic antibiotic, there is reason to believe that other related agents may be found which will be even more satisfactory clinically since they may be effective against a wider variety of organisms than penicillin.—*Leake, Texas State J. Med., July* 1944.

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MERCURIAL DIURETICS IN HEART FAILURE

"Although the value and use of mercurial diuretics for the treatment of advanced congestive heart failure has been thoroughly established, there remains the necessity for controlled evaluation of the various preparations useful for this purpose. Studies on mercupurin and salyrgan, mercurial suppositories and orally administered salyrgan theophylline have been reported from this laboratory. It is our purpose in this paper to present data on the effectiveness and safety of mercupurin administered orally in the routine treatment of congestive heart failure." In these sentences Batterman, DeGraff, and McCormack[1] begin their discussion of this subject which should certainly appeal to most practitioners.

The authors studied a total of 42 patients, of whom 32 were hospitalized and 12 ambulatory. "Whenever a diuretic was considered to be necessary, either a single dose of 5 tablets was given in the morning or the patient was given multiple doses consisting of 2 tablets three times daily for two to four days . . . Regardless of the scheme of administration, a preliminary control period was established during which time the maximum effect of bed rest, oxygen, sedatives, limitation of fluid intake, dietary restriction and digitalis and ammonium chloride whenever given maintenance doses was ascertained. The weight curve was followed in preference to the measurement of urinary output, because it has been proved to be a more accurate and sensitive index of diuretic response. The urine was examined at frequent intervals for albumen and formed elements." Each tablet used contained 100 mg. of mercupurin powder and 27 mg. of anhydrous theophylline.

The New York observers go on to tell us that "a loss of 3 pounds or more in body weight within forty-eight hours after the administration of the diuretic was considered a satisfactory response." And this response was obtained in about 70 per cent of the hospitalized patients. "Twelve ambulatory patients whose severe congestive heart failure could not be controlled with a maintenance dose of a digitalis preparation were given 102 trials with mercupurin tablets." In only 8 of the 102 trials was the response considered to be ineffective.

"In general, giving the drug in doses of 1 or 2 tablets three times daily for two to four days was a satisfactory means of producing diuresis. It was possible to extend the time necessary for clinic visits for those patients who would ordinarily have required mercupurin at weekly intervals, since the tablets definitely produced a satisfactory response sufficient to forestall the use of the parenteral preparation or delay the accumulation of edema."

In regard to toxicity we are told that "in no case, regardless of method, was there any evidence of kidney irritation. Gastrointestinal irritation as a rule was very mild and subsided promptly." And the authors further state that "the favorable influence of theophylline on the diuretic effect and toxicity of mercurial diuretics has materially altered our concept regarding their use." And "for the patient with severe congestive heart failure necessitating rapid removal of the edema fluid the parenteral route remains the method of choice." And in conclusion we read that "in a group of 42 patients, mercupurin tablets administered orally were found to be an effective and safe

1. Batterman, Robert C.; DeGraff, Arthur C., and McCormack, James E.: The Effectiveness and Safety of Mercupurin Administered Orally, J. A. M. A. 124: 1243 (April 29) 1944.

diuretic and, with proper use, are of definite value in the management of the cardiac patient with chronic congestive heart failure."

The New York group has chosen a subject that will appeal especially to those practitioners who are away from great hospitals and medical centers, because the methods of the New York observers can, in large part, be carried out by even the isolated physician. For some time the oral use of the mercurial diuretics has been under investigation and it is to be hoped that more favorable reports will be received. Physicians old enough to remember the highly toxic reactions and disastrous complications that not infrequently followed the use of novasurol and the older diuretics will be pleased to note that the administration of the mercurial diuretics continues to show improvement and that safety and efficacy remain high while the untoward effects have been in large part eliminated.

THE KENNY TREATMENT

PUBLICITY MISLEADING, SAYS DOCTORS' REPORT

By

Howard W. Blakeslee
Associated Press Science Editor

A charge that the public and many doctors have been misled by publicity about the infantile paralysis treatment of Sister Elizabeth Kenny, famous Australian nurse, was made to the American Medical Association at its recent meeting in a report by seven university professors, all physicians.

They also said they acknowledge that the Kenny publicity has stimulated the medical profession to more effective treatment.

The seven were appointed two years ago this June to evaluate the Kenny treatment by the orthopedic section of the American Medical Association and by the American Academy of Orthopedic Surgeons and the American Orthopedic Association.

"There is no evidence," the report said, "that the Kenny treatment prevents or decreases the amount of paralysis. We criticize severely the oft-repeated statement of Miss Kenny to patients who have come to her after treatment elsewhere that had this case come to her early the disability would have been prevented. Such statements are not founded on facts.

"Spontaneous recovery in poliomyelitis occurs in many cases. Reports in the medical literature indicate that this varies in different epidemics from 50 to 80 per cent. We have seen many patients receiving the Kenny treatment who showed no muscle involvement at any time, yet she assumes credit for their satisfactory results and does not take into account the factor of spontaneous recovery."

In another place the report said: "Miss Kenny has repeatedly stated that under 'orthodox' treatment only 13 per cent of the patients recovered without paralysis, while under her treatment over 80 per cent recover . . . Miss Kenny's statement of 80 per cent recovery under her treatment has not been supported by accurate statistics in a significant number of cases.

"The figure on 'orthodox' treatment is taken from an article which dealt entirely with severely paralyzed patients. Miss Kenny has been told repeatedly that this is not a fair comparison to make and that, if every case in an epidemic is included in the statistics, recovery of from 70 to 90 per cent can be expected from 'orthodox' treatment. Miss Kenny made this inaccurate comparison as late as May 1944.

"Some people using the Kenny treatment believe that paralysis can be prevented when treatment is started early enough; that is, prior to the onset of paralysis. We have seen enough cases, however, in which the Kenny treatment was instituted very early to be convinced that this does not prevent or even minimize the degree of permanent paralysis . . .

"While the committee disapproves of and condemns the wide publicity which has misled the public and many members of the medical profession, it acknowledges that this has stimulated the medical profession to revaluate known methods of treatment of this disease and to treat it more effectively."

The committee in its study visited six cities and 16 clinics, where about 740 patients were examined, of whom approximately 650 had been treated by the Kenny method.

NEXT ANNUAL MEETING
BIRMINGHAM
APRIL 17-19, 1945

STATE DEPARTMENT OF HEALTH

BUREAU OF ADMINISTRATION

B. F. Austin, M. D.
State Health Officer

SUN BATHING

The Health Officer of one of Alabama's sister states told recently of a young woman who spent a whole day in a scanty bathing suit immediately after arriving at the beach. Presumably, she wanted to acquire an attractive, healthy suntan in a hurry. What she got was something else—a bad case of sunburn. Instead of receiving admiring glances from her friends and perhaps attracting their envy, she was obliged to spend two weeks in a hospital. After receiving what are known as second degree burns, she lost consciousness and became gravely ill. Indeed, it appeared for a time as though she would pay with her life for her eagerness to get a suntan in record time.

A member of the staff of another State Health Department told a few years ago about the somewhat similar experience of a resident of his state. Going from her home to Atlantic City for a two-weeks vacation, she, like the other woman just mentioned, went in for sun-tanning in a big way by spending most of her first day at the famous resort on the beach under a broiling sun. Also like the other woman, she was in bed the following day and for the next ten days was as definitely sick as if she had been suffering from typhoid or pneumonia.

"She had a high fever the first two days, suffered tortures from burning and itching, and when the pain had subsided, her skin began to peel," the State Health Department spokesman wrote. "Instead of the golden suntan she had hoped to attain, she was an unattractive sight."

Unfortunately, examples of such unwisdom are not confined to the two states which have been mentioned. They may be found almost everywhere, except of course in those parts of the world where the weather is too cold for people to take vacations at the beach. And even in those places no doubt there are cases of sunburn due to overexposure to the sun's rays in solariums. Sun-burning is certainly a real danger among Alabamians, who derive so much pleasure from getting away from their jobs and their pent-up lives in apartments and playing like youngsters in bathing suits on the beach.

We hear much about the health-giving rays of the sun and remember their use in the treatment of a number of diseases. We know, for instance, that sunshine is considered essential to the proper growth and development of young babies and that, among other things, it prevents rickets. We know, too, that it is used in the treatment of the childhood type of tuberculosis and of tuberculosis of the bones and joints. We have it constantly impressed upon us by the vital statistics reports and epidemiologic records that the sunlight and fresh air which the body gets in such abundance in the summertime greatly reduce the incidence of colds, influenza, pneumonia and the other respiratory diseases. But what many people do not know, or at least do not keep in mind as they should, is that the same sun rays which are so beneficial and health-giving when employed in moderation may be dangerous medicine indeed when used immoderately. Even fewer people realize that an extreme case of overexposure to the sun may prove as fatal as the most potent poison.

During the months of July and August, the sun's rays are especially rich in ultraviolet light, which is responsible for the burning and blistering of tender skin unaccustomed to it. From now until the first of September, therefore, this is an especially serious danger, and those planning visits to the seashore or looking forward to obtaining suntans in the privacy of their own rooftops and backyards need to be particularly careful.

The term *sunburn* is sufficiently descriptive of this condition as far as the layman is concerned, but the medical fraternity has given it a scientific name. To the physician it is known as *erythema solare,* meaning inflammation due to the sun.

Many people have the mistaken impression that sunlight is one of nature's best remedies for an unattractive complexion.

Even when sunburn does not occur—and it certainly is no aid to beauty—the effect of sunlight may be definitely harmful from this point of view. Dr. Morris Fishbein, editor of *Hygeia* and of the *Journal of the American Medical Association,* called attention to this fallacy in his widely syndicated newspaper column some time ago. He wrote:

". . . the specialists in diseases of the skin recognize a condition which they call sailors' skin or farmers' skin, which occurs in people who seem to be especially sensitive to sunlight and who are exposed to it more or less constantly for a good many years. In these people the skin becomes wrinkled and dry and develops a number of permanent freckles."

This effect of sunlight upon the skin in fact is said by some authorities to be responsible for the coining of the term *leather neck* as a proper descriptive title for the nation's soldiers of the sea, who have played such a gallant part in all our wars, including the present one.

Those planning to acquire suntans while on their vacations this summer, or without benefit of vacations, should remember that it is not certain that they can do so. Some persons' skin simply will not tan. It will go through the preliminary steps, both painful and pleasant, including reddening, blistering, burning and peeling off. But it stops there. This is due to the fact that a certain type of skin is incapable of producing the pigment, known as melanin, which gives the complexion the brown or tan appearance associated with sun-tanning. As a well known health authority pointed out some time ago, "it is foolish for such persons to continue to suffer the inconvenience and pain involved in continuously unsuccessful efforts to gain that which nature never intended them to have."

Sun-bathing enthusiasts should know, and remember, that the ultra-violet light in the sun's rays is more intense between 10 A. M. and 2 P. M., Standard time, (or 9 A. M. and 1 P. M., War time) than at any other time of the day. Exposure to the sun during those hours and even as late as 2 P. M. War time is like taking a dose of medicine in concentrated form which is intended to be taken in dilution. Although brief exposure during those hours need not be dangerous or harmful, it should be attended by great care, especially at the outset. A skin that has not been exposed to the sun for a long time is almost certain to be seriously injured when suddenly exposed for more than a few minutes at a time to such a high concentration of ultra-violet rays. It is much better from every point of view to confine one's sun-bathing to the early mornings or late afternoons until one has acquired a good coat of tan. Otherwise most distressing and painful results are almost certain.

The length of exposure is of course no less important as a factor in avoiding sunburn than the time of exposure, because the sun's rays contain sufficient intensities of ultra-violet light at almost any hour of the day to cause serious injury to the skin, and even death, if exposure is sufficiently prolonged. So, regardless of when exposure takes place, the body should not be exposed to the sun for more than five or ten minutes the first day. The second day it is usually safe to increase the exposure to 15 or 20 minutes, and from then on until about the tenth day the period of exposure may safely be increased at the rate of about ten minutes a day. By that time the skin usually has developed a light tan, and from then on exposure for longer periods is relatively safe. However, care should be exercised even then, as the danger of exposure is not yet entirely over.

There is also a danger of becoming sunburned from sitting in the strong sunlight before the body has had time to dry. The small drops of water then become miniature magnifying glasses and greatly intensify the sun's rays. Swimmers should also remember that water and sand reflect the sun's ultra-violet rays, bringing a danger against which even large beach hats afford little or no protection.

There are several degrees and forms of sunburn of course. It may be as slight as a scarcely noticeable flush in the skin. Or it may be so severe as to cause the skin to blister and peel off. The first effect experienced by the victim of the extreme type is that of great warmth. Then, a few days or a week later, he experiences an intense itching sensation and begins losing his skin. If that part of the body is not again exposed to the sun and if suitable protective meas-

ures are taken, the affected area may be expected to heal fairly promptly. However, if the exposed area is more extensive, the victim may not get off so easily. He is likely to experience headache, dizziness, fever and vomiting. If as much as one-third of the total surface of the body is affected, death may result.

Sunburn is not essentially different from other types of burns except that the immediate burning sensation is usually less intense. If exposure is for only a short time beyond the safety point, the result may be only a slightly uncomfortable sensation. However, if the period of exposure is more prolonged, or if only a relatively brief period of exposure occurs at or near mid-day, the uncomfortable sensation becomes a distinct feeling of pain and may become almost unbearable. Some form of delirium also occurs in some cases.

As in the case of most other physical ailments, the best thing to do about sunburn is to avoid getting it. This can be accomplished by getting the body toughened to the sun's rays in the manner indicated and by observing the other precautions which have been outlined. To avoid unconscious exposure, as when chatting with friends on the beach or walking a considerable distance in the sun, it is advisable to wear an old shirt or robe over the bathing suit until one is ready to enter the water. Those who wish to avail themselves of an extra measure of preventive protection might apply cocoa butter, olive oil or some other suitable burn ointment to their skins. A five per cent tannic acid solution, applied to the exposed areas and allowed to dry is likewise recommended as a preventive, while many people also find tannic acid jellies helpful.

If a person has only a mild case of sunburn, some simple treatment is usually sufficient. A number of products—including the already mentioned olive oil, cocoa butter, tanic acid solution and tannic acid jelly —are helpful. Calamine lotion, on sale at many drug stores, is also helpful and has the advantage of not staining the clothing. When the burning is more severe a dressing which has been soaked in a solution of Epsom salts should be applied. When extensive blistering has occurred, a dressing of sterile gauze should be used. Treatment of any but a mild case of sunburn should be in charge of a physician, if one is available.

The danger of sunburn should not cause anyone to forego the advantages of sunbathing, which are many. Fortunately, they may be enjoyed with almost complete safety, provided the sun-bather exercises the same caution that he is expected to exercise in crossing a street or working around machinery. It is not necessary to pay for those advantages in the coin of pain or physical discomfort.

BUREAU OF LABORATORIES

Samuel R. Damon, Ph. D., Director

SPECIMENS EXAMINED

MAY 1944

Examination for diphtheria bacilli and Vincent's	385
Agglutination tests (typhoid, Brill's, undulant fever)	746
Typhoid cultures (blood, feces and urine)	737
Examinations for malaria	1,288
Examinations for intestinal parasites	2,076
Serologic tests for syphilis (blood and spinal fluid)	46,833
Darkfield examinations	29
Examinations for gonococci	3,926
Examinations for tubercle bacilli	1,770
Examinations for Negri bodies (microscopic)	63
Water examinations (bacteriologic)	1,448
Milk examinations	2,672
Miscellaneous	540
Total	62,513

EVALUATION OF SERODIAGNOSTIC TESTS FOR SYPHILIS

SUMMARY OF RESULTS OBTAINED 1939 TO 1944

Briefly, the evaluation of serodiagnostic tests for syphilis, as performed in the laboratories of the various state departments of health, is carried out annually by a committee representing the U. S. Public Health Service and the American Society of Clinical Pathologists. The purpose of the study is to determine the efficiency of performance of the particular serologic tests employed in the various departments. The method by which an evaluation is arrived at is to submit identical specimens of whole blood to the author-serologists and the state laboratories. These groups of specimens are derived from presumably non-syphilitic and syphilitic donors and the rating of each participating laboratory is determined by comparing its results with those obtained

by the originator of the particular test or tests it routinely uses. Each year several hundred specimens are examined in the study.

The ability of the individual test procedure to detect the presence of reacting substance in serum from syphilitic donors is referred to as "sensitivity" and is expressed on a percentage basis. On the other hand, the ability to exclude the presence of reagin in serums from presumably non-syphilitic donors is designated as "specificity" and is also expressed by a percentage figure. Doubtful reactions are given a one-half credit if occurring in the serum of a syphilitic donor and a one-half demerit or penalty when recorded for the serum of a non-syphilitic donor.

A satisfactory performance is arbitrarily considered to be one which attains a sensitivity rating not more than 10 percentage points below that of the control laboratory while in specificity a rating below 99 per cent is considered unsatisfactory.

Obviously, such a method is not considered to be a complete system for the evaluation of a serodiagnostic test, nor is it above objection on statistical grounds but it does afford a fairly acceptable yardstick by which the standard of laboratory service may be judged in terms of the presence or absence of clinical syphilis and in terms of the results obtained in comparable examinations by the group of control serologists.

Over the years the consecutive studies display a sustained trend toward more efficient performance of test methods and a more uniform standard of results in the majority of state laboratories. In part this has been due to abandonment of obsolete technical methods and the substitution for these of more efficient procedures and in part it has been due to better training of technical personnel.

In Alabama, the Kahn Standard test is the routine diagnostic procedure so our results are compared with those of the author of the test, Dr. R. L. Kahn of the University of Michigan, and his laboratory is spoken of as the "control" laboratory for all those using this particular test in the evaluation study.

Table I presents the summary of results obtained by the Central Laboratory of the Alabama State Department of Health as compared to those obtained by the control laboratory. On the whole the showing is highly creditable and for 1944 is especially noteworthy as this year the laboratory obtained the highest sensitivity rating of all participating laboratories performing the Kahn Standard test.

TABLE I

SUMMARY OF EVALUATION STUDIES 1939-1944

Year		Sensitivity	Specificity
1939	Alabama	69.6%	99.1%
	Control	77.4	100.0
1940	Alabama	71.8	100.0
	Control	71.2	100.0
1941	Alabama	67.0	100.0
	Control	79.2	100.0
1942	Alabama	75.5	100.0
	Control	80.7	100.0
1943	Alabama	70.9	100.0
	Control	71.8	100.0
1944	Alabama	84.7	100.0
	Control	82.1	100.0

BUREAU OF MATERNAL AND CHILD HEALTH

J. S. Hough, M. D., Acting Director

MATERNITY CARE

Contributed by

William A. Cunningham, M. D.
Obstetric Consultant

During the year 1943, and the first five months of 1944, the Bureau of Maternal and Child Health witnessed many changes in personnel, in number and location of maternity clinics, in duties, and, with the addition of the Emergency Maternity and Infant Care Program for soldiers' wives, a complete change in time allotment. There was no change in policy; in fact the enforcement of existing standards has increased the quality of maternity care in many respects. Scarcity of clinicians or too little time given by them to the maternity clinic, shortage of county health nurses, lack and difficulty of transportation for the patient, increase in economic status of prospective patients enabling them to secure the services of private physicians; all these forced the discontinuation of many clinics. However, several new ones were started after careful groundwork so that the total decrease in number was from 82 clinics in 42 counties as of April 1943 to 78 in 38 counties as of May 1944.

Broadly speaking, we now insist on three prerequisites for the opening of a new maternity clinic: community interest, an interested clinician and county health nurse, and adequate clinic facilities both as to quarters and equipment; all these points to be proven to the satisfaction of the state obstetric consultant after personal inspection and interviews. By strict adherence to these rules all new clinics have proven their worth, maintaining or increasing their attendance, and not one has had to be discontinued. The majority of closed clinics were started carelessly without proper groundwork, usually upon the request of a county health officer by mail.

The state has a regulation that if the average attendance per clinic session over a period of three months falls below five, such an event necessitates consultation with the participating county health officer, clinician, and county health nurse as to ways and means of increasing the attendance to the required level, or, with their consent, its discontinuance. An average attendance of over fifteen is discouraged; in such cases we favor increasing the number of clinic sessions. Of the 78 maternity clinics in May 1944, 27% had an average attendance per clinic session of less than five patients, 32% from five to seven patients, 33% eight to fourteen patients, and 8% fifteen patients or over.

During 1943, 8,764 women or 12% of all patients delivered in Alabama attended state maternity clinics. Of all colored maternity patients 28% attended these clinics but only 2.3% of the white patients did so. There were seven times as many colored as white patients. In Alabama, 61% of the colored women were delivered by midwives and approximately 90% were delivered at home. In rural areas, over 80% of the colored were delivered by midwives and 97% at home.

Over a period of just three years, 1940 to 1943, Alabama had a drastic reduction in the maternal mortality rate, 58.8 to 30.2 or 49%; in the neonatal mortality rate, 38.3 to 26.2 or 32%; and in the stillbirth rate, 38.4 to 30.1 or 22%. The 1943 white rates in these three categories were almost identical—22.9, 23.5 and 23.5; whilst the colored rates were very much higher—43.3, 31.0, and 42.1.

In comparing the 1943 rates of clinic with non-clinic patients, we make some very interesting observations:

1. Total clinic rates are greatly lower than non-clinic rates in all three categories —31% reduction in maternal mortality, 36% in neonatal mortality, and 18% in stillbirths.

2. The colored clinic rates are below the total state rates (white and colored) in all three categories—30% in maternal mortality, 40% in neonatal mortality, and 12% in stillbirths.

3. If we take the two opposite extremes economically and educationally, namely, the white private (non-clinic) patient and the colored clinic patient, it is rather startling to find that the colored rate is lower than the white in maternal mortality by 9% and neonatal mortality by 35%, but higher in stillbirths by 13%, probably in the main because of the prevalence of syphilis in the colored.

4. The colored clinic rates are tremendously below the colored non-clinic rates—in maternal mortality by 60%, in neonatal mortality by 51% and in stillbirths by 45%.

5. The white clinic rates are also greatly below the white non-clinic rates in neonatal mortality by 54% and in stillbirths by 28% because of the better supervision of nutrition and syphilis in both mother and infant. Private physicians very often do not take a serologic test for syphilis. The maternal mortality, however, is higher by 17% in clinic patients, which is understandable since more of them are delivered by midwives and more are delivered at home. Both their delivery and aftercare are poorer than that of the white private patient.

All in all, despite the numerous handicaps of the war years thus far, the results of maternal care in Alabama have been indeed gratifying.

Epidemic Keratoconjunctivitis—Sera from cases . . . as well as from presumably normal control individuals and persons with other eye conditions, have been studied for the presence of neutralizing antibodies to the virus previously isolated from the conjunctival scrapings of cases of epidemic keratoconjunctivitis. It is felt that the data presented lend support to the conclusion that the virus isolated by Sanders is etiologically related to the disease. Although the number of healthy individuals studied was small, the evidence tends to confirm th possibility . . . that a subclinical phase of the disease may exist.—*Korns et al., Am. J. Pub. Health, June '44.*

BUREAU OF SANITATION

T. H. Milford, M. S. in S. E., Director

SELF-PURIFICATION OF STREAMS

Contributed by

C. W. White
Assoc. San. & Public Health Engineer

The conservation of natural resources is one of the most important problems at present before this country. Development and utilization of the waterways is one of the most serious phases of this problem and stream pollution control plays an important part. The study and control of water pollution is a complicated subject in which self-purification of streams is only one of many factors involved. Certain standards as to the discharge of wastes in streams may be imposed for one set of conditions; however, this same standard may be impossible or impractical under another. Some middle ground must be established in each case, where economy, utilization and esthetics may reach a proper equilibrium. This delicate balancing of conditions is not often easily accomplished.

Self-purification has been defined as the natural process or combination of natural agencies that tend to render stable all foreign substances that find their way into the water. The most common type of pollution is caused by the discharge of wastes that contain organic compounds either in suspension or in solution, such as domestic sewage and some industrial waste. However, soil erosion has contributed greatly to the pollutional load as evidenced by the very turbid waters found in some rivers in Alabama. The forces of self-purification are physical, chemical and biologic in nature.

The most important physical forces are gravity, light and aeration. Gravity removes the heavy suspended matter by sedimentation. If the stream is sluggish and the organic pollution is heavy, deep sludge deposits may form and become offensive. The sunlight will bleach the color in the water and will induce certain organisms, such as algae, to grow. Aeration will add oxygen to the water by absorption from the atmosphere and will remove carbon dioxide and other gases of decomposition by escape into the atmosphere.

The presence of dissolved oxygen is one of the most vital substances in the decomposition of organic material. When the oxygen in the water is reduced to about 2 p.p.m. (parts per million or pound per 120,000 gallons of water), decomposition of the organic matter becomes a nuisance and odors are produced. When the oxygen is depleted the condition created is called septic. The slow-moving or bottom-breeding fish can live when the oxygen content is about 3.5 p.p.m. or above. For game fish, from 6 to 10 p.p.m. of oxygen are required. This latter concentration is possible only in cold, clear water as the saturation value of oxygen in water depends upon temperature mainly and the presence of salts and other substances to a lesser extent. The saturation value of oxygen in pure water at a temperature of 15°C. or 59°F. is 10 p.p.m. As the temperature is raised the saturation value is lowered, and at 30°C. or 86°F. the value is reduced to 7.6 p.p.m. The rate that oxygen is absorbed in the water depends not only on the initial concentration but on the surface area of the water and the degree of agitation that the water receives. As streams become more turbulent the rate of aeration is increased. Thus a fast flowing polluted stream may recover from the addition of a waste quicker than a sluggish stream or river of the same size and with the same oxygen concentration. High temperature and low water during the summer months result in an increase in the number and activity of the stream organisms and are largely responsible for the objectionable condition of the stream at that time.

Outstanding among the chemical forces are oxidation and reduction. Chemical coagulation is involved to a lesser degree. Oxidation changes suspended and dissolved organic matter to mineral matter, relatively stable organic matter, or gases. The rate of biologic oxidation depends on time, temperature, and the activity of organisms, as well as the amount of oxygen that is present in the water. This process is slow, requiring several days even under the best of conditions. In the process of reduction the organic matter produces liquids or gases and paves the way for stabilization by oxidation. Coagulation causes precipitation of dissolved and colloidal substances by chemical reactions induced by natural processes or the addition of certain trade wastes.

The biologic forces of natural purification are closely associated with the food habits

of the living organisms found in polluted water. The bacteria attack dissolved and suspended organic and mineral substances, and convert them by digestion into products of simple chemical structure. The number of bacteria greatly increase in the water following the discharge of sewage and other waste rich in organic matter as these wastes supply food for their growth and activity. The group of bacteria that lives in the presence of oxygen decomposes the organic matter and gives off carbon dioxide, water and mineral matter, while the group that lives in water without oxygen gives off objectionable gases. Algae use up carbon dioxide and utilize simple inorganic food substances resulting from bacterial activities. They in turn produce oxygen for the bacteria. In order for algae to grow, light is required, so turbid waters are relatively free of these small plant organisms. The protozoa, which are larger than bacteria and most forms of algae, live on organic matter; and many species prey upon bacteria and algae. Rotifera and crustacea, larger than protozoa, consume algae, protozoa and decaying materials. The still larger insect larva such as worms and maggots, "work over" the mud deposits and utilize the smaller animals and plants contained in the water and sediments. Fish, the largest living animal in the water, live on all of the smaller free floating organisms as well as smaller fish. The large aquatic plants act similar to algae, and the rooted forms utilize food substances contained in the bottom deposits.

When a large volume of sewage or other organic waste material is discharged into a clean stream, a whole train of events is put into action. The events do not occur at one place but in a series of zones below the point of pollution. These zones are not fixed or sharply bounded. They may overlap due to variation in temperature and stream flows which cause a shifting of the zones. Sometimes they are extended, sometimes contracted. Thus the zone of active decomposition, or the unsightly and very undesirable condition, may be completely eliminated, while at times it may spread over long stretches. When only a relatively small amount of polluting waste is discharged into the stream, none of the zones can be observed and may not be objectionable. Unless the water is used as a source of supply or for swimming it may even be desirable for fish life.

Various workers have a number of classifications and names for these zones. However, the most widely accepted classification is as follows: zone of degradation, zone of active decomposition, zone of recovery, and zone of cleaner water. A brief description of these zones is given to indicate the changes that take place following gross pollution.

ZONE OF DEGRADATION

The zone of degradation is the first stage in which life is reduced from a more highly organized to a more primitive stage, and the chemical and physical quality of the water is reduced. The first series of events takes place when a polluting waste material is discharged into a clear stream. The waste usually makes the water turbid and imparts to it a gray color. Sunlight is shut out; part of the suspended matter settles to the bottom and forms sludge deposits that decompose slowly. Fish may feed in the vicinity of the sewer outfall but disappear as the supply of dissolved oxygen is reduced. The bacteria soon become active and decomposition begins, thus increasing carbon dioxide and reducing the dissolved oxygen. As decomposition becomes established the typical sewage fungi appear. They form in masses with the appearance of cotton or wool, although made up of gelatinous threads. These organisms cover the stones of the bottom and cling to submerged sticks and plants. They are found at the lower end of this zone, which is considered to a point about where the dissolved oxygen content has been reduced to 40% of saturation or about 3.5 p.p.m.

ZONE OF ACTIVE DECOMPOSITION

The zone of active decomposition is the second zone which begins with an oxygen concentration of 40% of saturation, may become septic (completely devoid of dissolved oxygen), and then gradually change back to its initial oxygen content of 40% of saturation. From a physical standpoint the zone is marked by grayish color of water, sticky blackened sludge deposits with offensive odors, gas bubbles, and floating material with foul sewage odors. At the upper end of the zone the fungus life is plentiful and similar in appearance to that of the pre-

ceding zone. However, the organisms are more thread-like in structure and develop cream or gray tints that may become very dark. In the septic portion they disappear. No green plants are present except at the lower end of the zone. Worms can be found only near the upper and lower ends. Maggots develop in all but the most septic part. Fish do not penetrate this zone.

ZONE OF RECOVERY

The zone of recovery that follows the zone of active decomposition is directly opposite the zone of degradation but usually extends over much longer stretches. The physical character of this zone is marked by gradually clearing water and by granular bottom deposits that are not sticky and have no offensive odor. Dissolved oxygen increases to near complete saturation and carbon dioxide is reduced. Bacteria decrease in number as the available food is consumed and protozoa, rotifera, and crustacea increase in numbers. Algae and large aquatic plants reappear. The more tolerant fish, such as mudcat and sucker, are found on the bottom.

ZONE OF CLEANER WATER

The cleaner water zone is characterized largely by the normal plant and animal life that is found in clean streams. Game fish and smaller aquatic organisms find conditions favorable for their existence. The water from this zone may be self-purified to an extent that it can be used as a source of public water supply with adequate and proper treatment in a modern, well designed filter plant.

From the standpoint of the sanitary engineer the streams are not completely purified until their waters are fit for human consumption. For this reason they must be free from pathogenic organisms as well as attractive in appearance. Surface streams are thus seldom, if ever, entirely free of pollution. Therefore water from this source is not used for public water supplies in Alabama until it is first coagulated by chemicals, settled, filtered and chlorinated.

The State Department of Health realizes that there are a number of streams in the state that are grossly polluted and others to a lesser extent. Studies and recommendations are needed on these streams whereby actual data can be presented to authorities responsible for these conditions looking to elimination or reduction of the streams' pollution. In order to put stream sanitation on a national basis so that industries and municipalities in one state will not be penalized while in a neighboring state they can be free to pollute the streams at will, several bills have been introduced in Congress. Only one of these bills has been passed by Congress and it was vetoed by the President due to administrative objections. These objections have been eliminated in the bill (H. R 4741, introduced by Congressman Brent Spence May 3, 1944) which is now before the House of Representatives. This bill conforms in principle to the type of legislation approved by the Conference of State and Territorial Health Officers in a resolution that was first adopted April 14, 1936.

BUREAU OF PREVENTABLE DISEASES

D. G. Gill, M. D., Director

PREVALENCE OF COMMUNICABLE DISEASES IN ALABAMA

1944

	April	May	E. E.* May
Typhoid	4	10	14
Typhus	20	35	15
Malaria	64	152	266
Smallpox	0	3	4
Measles	2140	895	676
Scarlet fever	70	33	28
Whooping cough	94	133	197
Diphtheria	34	15	24
Influenza	407	114	270
Mumps	660	432	192
Poliomyelitis	2	3	2
Encephalitis	4	1	2
Chickenpox	188	82	148
Tetanus	6	1	3
Tuberculosis	293	218	312
Pellagra	2	2	31
Meningitis	42	37	9
Pneumonia	502	294	310
Trachoma	0	0	0
Tularemia	5	0	2
Undulant fever	12	15	7
Dengue	1	0	0
Amebic dysentery	3	4	0
Cancer	182	164	0
Rabies—Human cases	0	0	0
Positive animal heads	27	19	..

As reported by physicians and including deaths not reported as cases.
*E. E.—The estimated expectancy represents the median incidence of the past nine years.

"Our principal task now is to extend tuberculosis control activities so as to reach the greatest number of workers and their families in the shortest possible time, making full use of all private and public resources. With energetic use and concerted action, the final eradication of tuberculosis from the United States is well within our grasp."

BUREAU OF VITAL STATISTICS

Ethel R. Hawley, Acting Director

PROVISIONAL MORTALITY STATISTICS

REPORTED BIRTHS, STILLBIRTHS, DEATHS FROM CERTAIN IMPORTANT CAUSES AND RATES*— ALABAMA, APRIL 1944

Births, Stillbirths, and Causes of Death	Number of Deaths Registered—April, 1944			Rate (Annual Basis)		
	White	Colored	Total	1944	1943	1942
Births (exclusive of stillbirths)	**	**	5506	24.1	28.7	22.5
Stillbirth	**	**	191	33.5	36.8	38.4
Deaths (exclusive of stillbirths)	1236	926	2162	9.5	10.0	9.0
Infant Deaths:						
Under one year	146	127	273	49.5	39.9	49.0
Under one month	92	68	160	29.0	23.3	29.4
Typhoid, paratyphoid, 1, 2		1	1	0.4	0.4	
Epidemic cerebrospinal meningitis 6	4	6	10	4.4	5.9	1.3
Scarlet fever 8						
Whooping cough 9	2	3	5	2.2	7.7	2.5
Diphtheria 10	1		1	0.4	0.9	0.8
Tuberculosis, all forms 13-22	50	68	118	51.6	58.6	48.2
Malaria 28		2	2	0.9	0.9	1.3
Syphilis 30	9	26	35	15.3	15.0	11.8
Influenza 33	22	19	41	17.9	27.7	22.8
Measles 35	14	8	22	9.6	1.4	4.2
Poliomyelitis 36						0.8
Encephalitis 37	1		1	0.4	0.4	
Typhus fever 39	1		1	0.4	0.4	0.4
Cancer, all forms 45-55	124	47	171	74.8	74.1	69.4
Diabetes mellitus 61	19	7	26	11.4	18.6	11.0
Pellagra 69	5	4	9	3.9	7.7	6.3
Alcoholism 77	3	2	5	2.2	1.4	2.1
Intracranial lesions 83	108	93	201	88.0	89.1	82.0
Diseases of the heart 95	269	161	430	188.2	188.6	181.9
Diseases of the arteries 96-99	17	5	22	9.6	8.2	8.9
Bronchitis 106						1.3
Pneumonia, all forms 107-109	70	52	122	53.4	60.4	51.2
Diarrhea and Enteritis (under two) 119	3	4	7	3.1	4.1	3.0
Diarrhea and Enteritis (two and over) 120	6	1	7	3.1	0.9	1.7
Appendicitis 121	9	6	15	6.6	9.5	4.2
Hernia, Intestinal Obstruction 122	5	7	12	5.2	6.4	5.9
Cirrhosis of the Liver 124	8	4	12	5.2	2.7	4.6
Nephritis, all forms 130-132	81	83	164	71.8	84.5	67.7
Diseases of the Puerperal State 140-150	8	15	23	40.4	41.2	48.7
Puerperal Septicemia 140, 142a, 147	3	5	8	14.1	6.1	23.4
Suicide 163-164	8		8	3.5	12.3	5.5
Homicide 165-168	7	15	22	9.6	8.6	14.8
Accidental deaths (exclusive of motor vehicle) 169, 171-195	104	39	143	62.6	54.1	48.2
Motor Vehicle 170	27	9	36	15.8	14.5	15.6
All other known causes	213	106	319	139.6	146.3	131.1
Ill defined and unknown causes 199-200	38	133	171	74.8	79.5	76.6

*Birth and death rates per 1,000 population; infant death rate per 1,000 live births; stillbirths per 1,000 total births (inclusive of stillbirths); from specific cause per 100,000 population; from puerperal causes, per 10,000 total births.

**Not available.

Foods: Facts and Fads—The extent of food faddism in the field of nutrition will always vary inversely with our knowledge about food facts. A fad is defined as "a custom, amusement or the like, followed for a time with exaggerated zeal." Unfortunately, the word "fad" usually carries with it an unfavorable connotation; I shall use it, however, not in an invidious way but more as an indication of changing attitudes towards foods.

We have always had food fads, and we have many of them now. Today we pursue with particularly exaggerated zeal the vogues of vitaminism and food enrichment.

Of course there is nothing faddish about a vitamin; vitamins, indeed, are highly important and essential food constituents which vitalize many cellular activities. Without them in the diet in adequate amounts deficiency disease develops. But it is difficult to believe that vitamin deficiencies have suddenly become so incipient in so many of us that we must now spend more than a hundred million dollars annually buying vitamin pills for self-diagnosed ailments suggested to us by skillful advertising. We all know the old saying in medicine that a physician who treats himself has both a fool for a patient and a fool for a doctor. And yet thousands of Americans daily diagnose vitamin inadequacies in themselves, their friends and neighbors, and rush to the corner drug store for vitamin pills. But, as A. J. Carlson has so aptly put it, the people who need vitamins most cannot afford to buy them and those who can afford to buy them probably do not need them. Nonetheless, I freely admit that some of the most glamorous pin-up girls on the American scene owe their zestful bouyancy, according to the advertisements, to the miracle of the vitamin B complex; unfortunately, however, male pulchritude has apparently not been so readily attained, even after the purchase of the entire vitaminic alphabet. The story is told about almost any luncheon meeting of busy executives that, as the guests sit down, the rattling sound heard round the room is merely made by the vitamin pills shifting cargo under the influence of the gravitational pull.

Vitamins should be bought and eaten in the "protective" foods, the fruits, the green and yellow, leafy vegetables, milk, meat and eggs, except when there is some medical reason for their additional use. The fact that they are harmless when eaten in large and expensive amounts does not justify the fad itself. If one needs only three glasses of water daily for optimal health and happiness, the drinking of nine extra glasses of expensive bottled water causes additional benefit to no one but the bottler and his associates.

A fad practiced by some, which, due to the war, is again gaining ground, is vegetarianism. This is so because the vast wartime economic dislocations are leading steadily to lowered living standards and a definite trend toward direct cereal consumption. Even in the United States we are now facing the unpleasant fact that we cannot feed enlarged livestock populations with grains suitable for human consumption.—*Cannon, New Orleans M. & S. J., July* 1944.

BOOK ABSTRACTS AND REVIEWS

Minor Surgery. By Frederick Christopher, B. S., M. D., F. A. C. S., Associate Professor of Surgery at Northwestern University Medical School, Chicago; Chief Surgeon at the Evanston (Ill.) Hospital. Fifth edition, reset. Cloth. Price, $10.00. Pp. 1,006, with 575 illustrations. Philadelphia and London: W. B. Saunders Company, 1944.

The fifth edition of Minor Surgery still maintains its original purpose; namely, a presentation of surgical procedures which are most valuable to the general practitioner, the intern and the resident. It is not proposed as a textbook or reference book for the well trained surgeon. It presents the care of minor surgical conditions in order that the results may be better in the hands of the general practitioner who is obligated to see most of these accidents, etc.

Throughout the entire text are excellent practical diagrams and photographs which illustrate the text most carefully. Their selection and reproduction are a compliment to the author.

Throughout, Dr. Christopher quotes verbatim from the references, particularly when in his opinion that particular reference is the best authority on the subject. These quotations are given in very small print which, therefore, reduces the size of the entire volume.

The treatment of the common boil or furuncle by conservative methods is strongly advocated by the dermatologists. Dr. Christopher, a surgeon, is inclined to agree with the dermatologists in their conservative treatments as being superior to incisions, etc.

The text is up to date in respect to the treatment of burns; that is, in the use of pressure bandage rather than frequent dressings. Of course the sulfa drugs are everywhere included. As in other texts, this presentation strongly opposes the use of tannic acid in burns about the hands and face. This is now being accepted widely. The irrigation method used by the British is given only slight mention.

Many minor procedures are included, some of which are often forgotten, such as the removal of rings from swollen fingers, the technique of washing out ears, the method of turning up an eyelid and similar minor procedures that often cause embarrassment.

Discussion of varicose veins is rather complete and the illustrations self-explanatory. In the various surgical procedures outlined, the diagrams are placed in serial order and are excellent illustrations.

One of the distressing conditions seen in private practice, namely, pruritis ani, is very completely discussed, including the possible etiology and various types of treatment.

The author presents the subject of fractures first in general and then in individual bones. It is evident that in all fractures except open and infected he advocates the use of local anesthesia for reduction. The illustrations of methods support his contention of the advisability of this type of anesthesia; in fact, he spends an entire chapter on the use of local anesthesia for various purposes.

The last three chapters are primarily for the use of residents and interns and surgical services in the hospitals. They contain many good pointers, techniques, etc.

This, the fifth edition of Christopher's Minor Surgery still holds a front place on the shelf of every general practitioner. It, undoubtedly, is one of the leading reference books for men who see minor injuries and do minor surgery.

Norman Van Wezel.

Pain. A Publication of the Association For Research in Nervous and Mental Diseases. Vol. XXIII. Cloth. Price, $7.50. Pp. 468, with 116 illustrations and 19 tables. Baltimore: The Williams and Wilkins Co., 1943.

This volume is a compendium of 32 articles published as the proceedings of the Association for Research in Nervous and Mental Diseases at its meeting in New York City in December 1942. The articles are in the form of brief reports made by the investigators upon their given line of research. The subject matter all relates in one form or another to pain. The book represents a monumental amount of intricate research on a subject that does not lend itself well to either clinical or experimental investigation because of the many variable technical details, but one cannot do otherwise than commend these scientists after reading of the ingenious methods of attack used to solve their problems.

The book starts with a discussion of entirely theoretical problems but gradually brings in more practical matters until at the end the two merge together to make interesting reading. The articles which would interest the practitioner are those concerning the nature of itching, studies on headache, and the pain of the various organs, such as the heart, gastrointestinal tract, urinary tract, etc. It is interesting to note that many drugs have been found that will increase the threshold of pain but that there are none which will decrease it. In the discussion of itching it is pleasing to note that there is now a better agreement among investigators as to its nature. They now feel that itching is related to the protopathic pain fibers in contrast to the epicritic fibers and that the unpleasantness of itching is due to the poor localization of these sensations because of frequent branching of the protopathic neurons and thus producing a scattered sensation. The relief of itching by scratching is explained by the transforming of protopathic impulses to epicritic impulses. The more epicritic or sharper the scratching instrument the more satisfying is the relief from the itching. The reports on the study of visceral pain are interesting but not very practical.

This book makes interesting reading for the research-minded reader but will prove monotonous and not practical for the practitioner who might be looking for useful information on pain.

P. K. Burwell.

The American Illustrated Medical Dictionary. By W. A. Newman Dorland, A. M., M. D., F. A. C. S., Lieut.-Colonel, M. R. C., U. S. Army; Member of the Committee on Nomenclature and Classification of Diseases of the American Medical Association; Editor of American Pocket Medical Dictionary. With the collaboration of E. C. L. Miller, M. D., Medical College of Virginia. Twentieth edition, revised and enlarged. Cloth (flexible and stiff binding). Price, $7.00 plain; $7.50 thumb indexed. Pp. 1,668, with 885 illustrations including 240 portraits. Philadelphia and London: W. B. Saunders Company, 1944.

This is the twentieth edition covering a period of 44 years of publication. It has increased in size, due to the increase in terminology. The terms have now been made to conform to the Standard Nomenclature of Diseases and Operations published by the American Medical Association.

It contains 1668 pages with 885 illustrations. There are excellent tables and pictures of all the arteries, nerves, muscles and veins.

The publishers are to be complimented on the fine texture of paper and the excellent physical set up of type. Many of the portraits that are included could have been either better reproduced or the original collected with more care. The colored chart on malarial parasites is not of the best quality; better reprints have been seen in more recent publications. Perhaps future editions of the dictionary will contain an improved chart.

The last 6 pages containing 3 columns each of table of doses is an accurate and rather complete compilation of dosage.

Despite minor faults the *American Illustrated Dictionary* is still the standard for the medical profession.

Norman Van Wezel.

AMERICAN MEDICAL ASSOCIATION NEWS

POINTS TO NEED OF AUGMENTING OUR REHABILITATION SERVICES

DOCTOR SAYS HEALTH RESORTS CAN BE UTILIZED IN REHABILITATION OF INDUSTRIAL AND OTHER CIVILIAN AS WELL AS MILITARY CASUALTIES

Civilian hospitals as well as military hospitals must augment their rehabilitation services greatly and our American health resorts can be utilized to advantage for the rehabilitation of industrial and other civilian as well as military casualties, Frank H. Krusen, M. D., Rochester, Minn., declares in The Journal of the American Medical Association for July 29.

"It is undoubtedly a fact," Dr. Krusen says, "that we are now facing the most stupendous problem in rehabilitation which has ever existed in the history of the world.

"The number of war injuries sustained in the Army and Navy and also in industrial and other civilian pursuits will be the largest our country has ever known. Adequate utilization of our national health resorts will assist materially in solving our rehabilitation problems. . . ."

He points out that steps to meet this problem already have been taken by both the Army and the Navy and also that civilian hospitals are beginning to consider plans for the rehabilitation of injured industrial workers and civilians in other fields. The importance of rehabilitation centers of the health resort type is emphasized by the British experience in this field, Dr. Krusen says. He tells of the care of an air gunner "who remained in a civilian orthopedic hospital for treatment of a torn and displaced semilunar cartilage (of the knee) for ten months and who was still totally incapacitated even though the diagnosis had been correct, a skilful operation had been performed, there had been no surgical complication and he was receiving daily massage. He limped, he did not cooperate, and he was depressed. He had been told that 'the nerve to his knee had been cut.' Then he was transferred to one of the orthopedic rehabilitation centers of the Royal Air Force medical service.

"Watson Jones (in a recent issue of the British Medical Journal) described subsequent events as follows: 'He saw the sky, the sea, the open spaces. For many months he had seen only the stone walls of many corridors. His new surroundings were different: there was a lounge and a writing room, tasteful decorations and flowers, a menu which was varied and excellent, an atmosphere of well being and contentment. After a few days he smiled. There was sometimes a sparkle in his eye. Within a week he sensed the spirit of optimism. It grew upon him and he was reassured. His difficulties were explained and he was taught special exercises. He learned to walk, then to run. He became an enthusiast and worked hard. He worked in the gym, played on the fields, swam in the pool, cycled on the track. Time raced past, for he was busy.

He attended lectures, played billiards and went to concerts. He became bronzed and fit. He laughed and was full of the joy of life. In seven weeks he returned to his unit and to full duty. He forgot about the 'nerve in his knee.'

"'Ten months—total incapacity; seven weeks—full recovery.'

"What better argument could one present for the importance of the health resort in rehabilitation of the disabled? Watson Jones has stressed the fact that this is not an isolated case but is 'typical of the experience of many victims of bone and joint injury.'"

Dr. Krusen describes some of the work that is being done at several of the rehabilitation hospitals of the Army and the Navy. The effectiveness of the program is illustrated by his comments on the program at the Army's Fitzsimons General Hospital, Denver.

"Convalescent care of these patients," he says, "includes drill, calisthenics and gymnastic sports such as volley ball, basketball and football signal practice. The convalescent patients who require physical therapy report regularly to the physical therapy clinic for treatment. The therapeutic program is coordinated so that patients are kept busy most of the day.

"When patients are assigned to the convalescent ward program they are no longer under liberal hospital regulations but under strict military discipline. Surprisingly they prefer this strict supervision of regimentation to the liberal and somewhat relaxed discipline of the ordinary hospital ward. Most of the patients were in the surgical service and their morale improved materially when they were transferred to the convalescent ward program. Interestingly, the patients on this program have exhibited a decided increase in the rate of progress toward recovery over the rate achieved when they were receiving only physical therapy. It is proposed to coordinate this convalescent ward plan with occupational therapy and work therapy. This is the type of program which undoubtedly will tend to improve morale and speed recovery. . . ."

Dr. Krusen says that the growing recognition of the rehabilitation problem by civilian hospitals is reflected in the fact that the Michael Reese Hospital in Chicago is contemplating an elaborate convalescent center which can serve this purpose.

He says that "Obviously a rehabilitation plan which is conducted at a health resort such as White Sulphur Springs (West Virginia, operated by the Army) or Glenwood Springs (Colorado, operated by the Navy) will tend to appeal to an injured man more than one conducted in less pleasant surroundings, and surely a well organized, properly administered scheme of treatment will be more likely to gain his cooperation than would the ordinary hospital routine.

"We can assume, therefore, that well developed rehabilitation programs at certain health resorts will have very definite places in treatment for injuries. The program is just beginning to take form, and it is to be hoped that it will continue to expand and grow.

"As the pattern becomes clearer and clearer, one can already catch glimpses of an almost ideal reconstruction regimen. All of us must strive to bring this program into sharp focus, giving to it our best health resorts, our most skilful rehabilitation workers and some of our finest executives. A lesser effort for the care of the injured defenders of our way of life cannot possibly be considered acceptable."

ADVISES HOW THOSE WITH ULCERS OF STOMACH CAN AVOID FLARE-UPS

SUCH PATIENTS, AFTER NERVOUS CRISIS, SHOULD TAKE FOOD EVERY ONE OR TWO HOURS FROM DINNER TIME TO 3 A. M., DOCTOR SAYS

Pointing out how to avoid flare-ups of ulcers of the stomach and duodenum, Walter C. Alvarez, M. D., Rochester, Minn., says in The Journal of the American Medical Association for July 29 that "It is suggested that when a patient who has had an ulcer goes through an emotional crisis he should immediately start taking food every hour or two. He shouldn't wait for the expected flare-up or hemorrhage or perforation. The extra feedings are probably most needed between the hours of 10 p. m. and 3 a. m."

Explaining the reasons for this advice, Dr. Alvarez says:

"A man of 50 who had always been well discovered one day that the man who for twenty years had been his brother-in-law, his closest friend and his business partner had been falsifying the books in order to steal from him. All that night he lay awake

in great mental distress, and next day he had a big gastric hemorrhage. Another man, a physician, after examining a woman's stomach with a roentgenoscope, discovered that he had used a current of 60 milliamperes instead of the usual 3 milliamperes. After lying awake all night worrying over the expected burn and resultant damage suit he found himself almost incapacitated by the pain of a bad ulcer. Another man, when a violent strike in his factory distressed him terribly, had a big hemorrhage. A woman who adored her peppery little daughter-in-law one day inadvertently offended her and brought down on her head a storm of abuse which nearly killed her. Next day a long-healed ulcer flared up and perforated. A woman who heard that her soldier husband had just been killed at the front promptly had a hemorrhage.

"Many such experiences will doubtless spring to the mind of every busy physician who reads these words, all illustrating what is well known today, namely that the patient with ulcer is most in danger of a flare-up or a catastrophe during the hours immediately following a distressing emotional storm. Then is the time when, probably with an increase in the acid gastric secretion, and perhaps a decrease in the alkaline and neutralizing secretions that flow into the duodenum, or a combination of these two processes, the acidity of the contents of the first portion of the duodenum becomes so high that an ulcer either develops or, if present already, promptly becomes greatly deepened. . . .

"Under the circumstances it would seem obvious that the time to start strenuous treatment should always be immediately after a psychic strain has come. Why should one wait until an ulcer has formed or, if present, has eaten its way into a blood vessel or clear through the wall of the intestine? Why wait for disaster when it might perhaps be headed off and prevented?

"Furthermore, since it now appears probable that most of the injury to the duodenal mucosa that is wrought by acid comes during those hours between 10 p. m. and 3 a. m., when, in the person with an ulcer temperament, the stomach tends to be empty of food but full of highly acid and unbuffered gastric juice, would it not be logical the evening after a nervous crisis has occurred to begin with either a constant antacid drip or the taking of food and antacids every one or two hours from dinner time on to 2 or 3 a. m.? The patient can easily set an alarm clock to wake himself perhaps at midnight and again at 2 a. m.

"For some years now I have been asking my patients with ulcer to do just this, and already some feel that the treatment has tided them over some bad crises in their lives and kept them from having a flare-up of their ulcer. Dozens of physicians with a tractable type of ulcer have told me that during the intervals in which their life goes peacefully they do not seem to need much dieting or other treatment."

SAYS POST DELIVERY CONFINEMENT PERIOD CAN BE SAFELY SHORTENED

Experience at Sinai Hospital of Baltimore, and elsewhere, indicates that bed shortages in maternity wards can be relieved at least in part by allowing patients to be up on the third or fourth day after delivery instead of remaining flat on their backs for ten or twelve days, Morris L. Rotstein, M. D., Baltimore, reports in The Journal of the American Medical Association for July 22.

"Because of the greatly increased number of patients in the obstetric clinic at the Sinai Hospital of Baltimore, with the resultant bed shortage," Dr. Rotstein says, "we decided to allow a series of patients up early in the puerperium to increase our bed turnover and note the various effects if any. One hundred and fifty patients who delivered vaginally were chosen at random and allowed up on their third or fourth day after delivery. Parity and type of delivery were not taken into consideration. However, no patient with toxemia, heart disease or other complication of pregnancy was included in this group . . . In this series no ill effects were noted. The patients when allowed up felt well and were able to walk about and take care of both themselves and some of the inbed patients, thus greatly assisting a war depleted nursing staff. When allowed home, which varied from the sixth to the eighth postpartum day, they felt strong and were better equipped to go about their duties of taking care of themselves and their newborn infants . . ."

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Miscellany

URGES PROTESTS NOW AGAINST THREAT TO MEDICAL EDUCATION

JOURNAL SAYS PRESENT POLICIES OF THE ARMED FORCES AND SELECTIVE SERVICE WILL RESULT IN AN ANNUAL DEFICIT OF 2,000 DOCTORS

Declaring that medical educators and the medical profession of the country refuse to accept the responsibility for the acute shortage of medical care which will threaten this country within a few years if current regulations and policies of the Selective Service System and the armed forces in regard to medical students persist, The Journal of the American Medical Association for July 8 points out that the present situation will result in an annual and cumulative deficit of 2,000 physicians a year in face of new and increased demands for medical service. It advises the medical profession that now is the time to protest to the House and Senate Military Affairs committees against this blind disregard for medical care in the future. The Journal says:

"In January 1944 it seemed that civilian and military needs for doctors would be met reasonably satisfactorily by the arrangement in which the 55 per cent of entering medical school classes would be provided by the Army Specialized Training Program, 25 per cent by the Navy V-12 Program and 20 per cent from civilian sources. In the past six months this program has rapidly deteriorated. Today medical educators and the medical profession of the country refuse to accept the responsibility for the acute shortage of medical care which will threaten this country within a few years if current regulations and policies persist. The responsibility must rest with the armed forces, the Selective Service System, the President and the Congress of the United States.

"In February the Army drastically curtailed the Army Specialized Training Program and has since renegotiated its contracts with medical schools to provide 28 per cent of the 1945 entering classes instead of 55 per cent, increasing to 47 per cent the numbers medical schools must obtain from civilian sources.

"In April the Selective Service System abolished all further occupational deferments of premedical and medical students not enrolled in medical schools by July 1, 1944. As a consequence, it was estimated that the entering classes of 1945 would be reduced 25 to 30 per cent.

"The threat to medical care entailed in these policies was pointed out to General Hershey, the Secretaries of War and the Navy, the President and others, with the suggestions that the situation could be met by (a) reinstitution of the inactive reserves by the Army and Navy, which functioned well for a year, and/or (b) an appropriate Selective Service adjustment, which was definitely a second best arrangement.

"The Army and Navy rejected the first alternative as an evasion of the Selective Service law, and the Selective Service System rejected the alternate proposal because of the acute need of the Army for young men. The needs for medical care were considered to be subordinate to the needs of the fighting forces.

"Alarmed at these developments, the House of Delegates of the American Medical Association, on the recommendation of the Council on Medical Education and Hospitals of the American Medical Association, passed the following resolution at its opening session, June 12:

> Whereas, The present policy of the Army and the Selective Service System in preventing the enrolment of a sufficient number of qualified students will inevitably result in an overall shortage of qualified physicians, with imminent danger to the health and well being of our citizens; therefore be it
>
> *Resolved*, That it is imperative that immediate action be taken by the President or the Congress of the United States to correct the current drastic regulations, which result in a restriction of the number of students qualified to enter the courses of medical instruction in approved medical schools.

"This resolution was sent to the President, the Secretaries of War and the Navy, the Selective Service System and all members of the House and Senate Military Affairs committees."

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**Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154. Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60. Proc. Soc. Exp. Biol. and Med., 1934, 32, 241. N. Y. State Journ. Med., Vol. 35, 6-1-35, No. 11, 590-592.*

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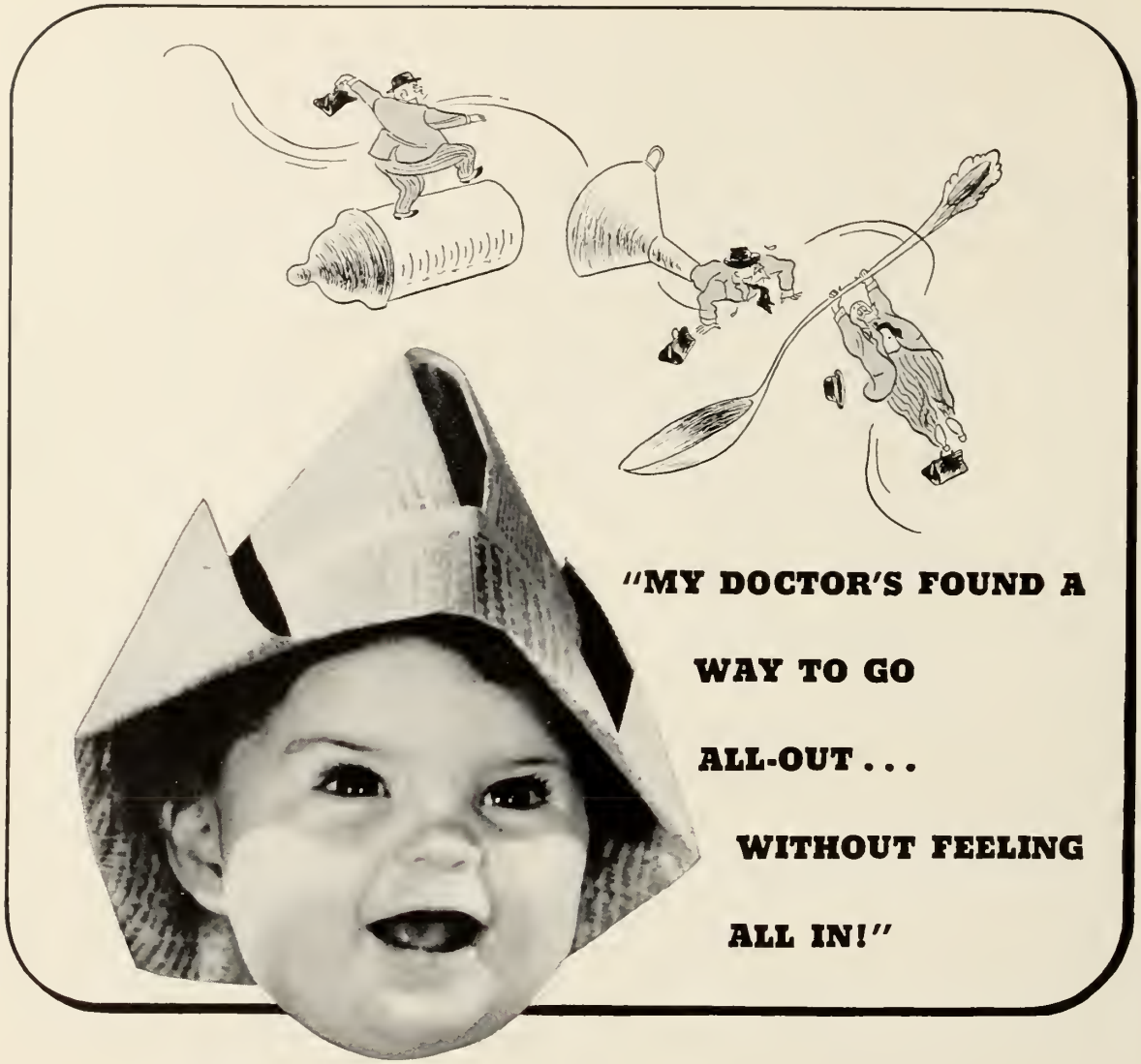

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THE PROGNOSIS AND TREATMENT OF CARCINOMA OF THE LARYNX

FRANCIS E. LeJEUNE, M. D.
New Orleans

The presence of carcinoma in any organ of the human body is just cause for apprehension, for this lesion is second only to heart disease as a cause of death in this country. Four to 5 per cent of all malignancies of the human body occur in the larynx and 95 per cent of these lesions are found in men. Eighty-five per cent of cases occur within the larynx; the growth usually involves one vocal cord, ventricle or ventricular band and is spoken of as *intrinsic* carcinoma of the larynx. The remaining 15 per cent occur on the rim or posterior portion of the larynx and are referred to as *extrinsic* carcinomas. It is important to distinguish between intrinsic and extrinsic carcinomas, because the former respond favorably to surgery, whereas, in the latter type, the prognosis is bad.

In laryngeal cancer, as is now the conception in all malignancies, there is no definite age of occurrence. The larger percentage of cases occurs between the fourth and seventh decades of life, with the highest incidence in the sixth decade, although the growth is occasionally encountered in younger persons. A laryngofissure was recently done on a 21 year old boy and a laryngectomy on a 28 year old man. Cases of younger patients have been reported. It is most interesting to note that women rarely have intrinsic cancer of the larynx; less than 10 per cent of cases occur in women. Whereas intrinsic carcinomas of the larynx predominate in men, the extrinsic form is more common in women. No plausible explanation for this vast difference has been offered.

Although smoking has been considered to act as an irritant to the laryngeal mucosa, I have seen several patients with carcinoma of the larynx who had never used tobacco in any form. The true cause of cancer still remains enigmatic, although it is generally agreed that continued irritation is a predisposing factor.

The preferential site of laryngeal cancer is the region which is most active—the vocal cords. Jackson estimates that 85 per cent of intrinsic carcinomas are found on the vocal cords. These lesions are always unilateral in their incipiency, and their slow growth and late extension are due to the peculiar and restricted lymphatic arrangement within the larynx. Because of the limited extension of the lymphatic vessels in the region of the vocal cords and interior of the larynx, a good prognosis can be expected in all early cases of intrinsic lesions. Malignancies occurring within the larynx offer a larger percentage of cures than carcinomas in any other organ of the body. This was aptly stated by Crile, who said that no surgical operation offered so certain and permanent a cure as that of intrinsic cancer of the larynx, provided an early diagnosis was made.

Intrinsic cancer of the larynx gives early warning of its presence in the form of hoarseness. No discomfort is felt in the early stages; only an alteration of the voice is evident. Unfortunately, the layman does not

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Read before the Association in annual session, Montgomery, April 19, 1944.

realize the full significance of persistent hoarseness, probably because of past experience with hoarseness resulting from the ordinary cold which subsides spontaneously. Every patient with hoarseness lasting over two weeks should have an examination by means of the laryngeal mirror, for it is only by such an examination that an accurate diagnosis can be made in cases of tuberculosis, syphilis, cancer and tumors of the larynx. The importance of an early diagnosis can not be stressed too vigorously, as many of these conditions are amenable to treatment in the early stages. Particularly in cancer of the larynx does the treatment, cure and life of the patient depend upon an early diagnosis. The general practitioner is in a position to play an important role in the control of this type of cancer. He must be forever on the alert for cases of persistent hoarseness, referring these to a competent specialist who can conduct a thorough laryngeal investigation. The cooperation of the general practitioner is necessary in disseminating to the patient the fact that persistent hoarseness is the danger signal in carcinoma of the larynx. Until the layman becomes fully cognizant of the significance of persistent hoarseness, we can not expect to see more cases of malignancy of the larynx in the early stages.

The quotation, "Too many too late," is appropriately applicable to carcinoma of the larynx. Too many cases of carcinoma of the larynx are seen for the first time by the laryngologist when it is too late to offer any hope for cure. It has been estimated that 40 per cent of cases of carcinoma of the larynx are so far advanced when seen for the first time by the laryngologist that no type of surgical procedure can be offered them. These are the tragic cases, for, had an early diagnosis been made, many of these patients would have been cured. If an early diagnosis were made in every case of carcinoma of the larynx and proper measures instituted, there would be comparatively few cases in which complete excision of the larynx would be required. Every case of persistent hoarseness should be considered as a possible case of carcinoma of the larynx until proved otherwise. However, surgical procedures on the larynx should never be attempted until a biopsy, or repeated biopsies when indicated, has been performed.

Ninety-six per cent of laryngeal malignancies of the vocal cord are squamous cell carcinomas. These cordal lesions are unilateral in their inception and slow in growth on account of the restricted lymphatic supply. They may extend in any direction but they usually spread in the longitudinal plane of the cord. As soon as the lesion is manifest on the cord, a warning signal appears in the form of an alteration of the vocal sound recognized as hoarseness. Ample time for study, diagnostic confirmation and surgical intervention is thus provided by nature. Delay in examination permits progression of the lesion unmolested.

Whereas cordal carcinomas give early warning of their presence, lesions occurring on the aryepiglottic folds or the outer rim of the larynx give no indication of their presence until they are fairly well advanced. This extrinsic type of carcinoma has a much less favorable prognosis than lesions occurring in the interior of the larynx. A simple examination with the laryngeal mirror does not always permit visualization of an extrinsic lesion, whereas the trained laryngologist can always obtain sufficient information by this means to warrant a tentative diagnosis of a cordal lesion. Direct laryngoscopy is always used to study the lesion.

Once the diagnosis has been established, the proper surgical procedure must be carried out. The amount of surgical intervention necessary to effect a cure in carcinoma of the larynx is directly proportionate to the extent of the lesion. For this reason, an arbitrary division of the cases into four groups will facilitate the discussion of treatment.

The first group, representing the earliest and most definitely limited of all the lesions encountered, comprises carcinomas confined to a small portion of the surface of one vocal cord. The tumor may be only the size of a grain of rice, a match head or a pea but it is essential that normal tissue exist on all sides. Such a lesion is generally seen somewhere near the junction of the anterior and middle thirds of the vocal cord. Thus, it can readily be seen that this group includes only a very special type of growth which unfortunately is not seen often enough because of delay in otolaryngologic consultation. Intralaryngeal extirpation, with wide margins of normal tissue, offers much to these patients. The

percentage of cures in this group is equally as high as in group two where the surgical procedure is more formidable. This method is simple, accurate and productive of vocal and end results superior to any other surgical procedure for carcinoma of the larynx.

The second group includes those cases of early cancer of the vocal cord which are either too far advanced or two unsatisfactorily located for operation by intralaryngeal dissection and yet offer reasonable hope of cure without the necessity of total extirpation of the larynx. The ideal case is one in which the lesion involves the middle portion of the vocal cord with both ends uninvolved. The operation of laryngofissure, which, through an external approach, is directed toward splitting the thyroid cartilage in the median line, thereby exposing its interior, is a brilliant technical conception and is relatively simple to perform. The results are excellent and the voice following operation is usually very good. More and more cases are being seen which fall into this group and the benefits obtained from such an operation merit its continued use.

In the third group are placed those cases in which the lesion, although considered too extensive for laryngofissure, is still confined within the cartilaginous structure of the larynx. Total laryngectomy is indicated in this group, provided there is no evidence of cervical metastasis. In the presence of an extensive cancer there can be no compromise; partial loss of voice is, of course, preferable to the loss of life. Laryngectomy provides excellent results in properly selected cases; that is, those in which the lesion is still confined within the larynx proper. The performance of laryngectomy is long and tedious, and is best done, in our opinion, under heavy sedation and a local anesthetic.

For the past thirteen years we have used the mid-line incision extending from above the hyoid bone to the suprasternal notch. This type of incision facilitates closure and expedites healing so that the patients are out of bed on the fifth day, at which time the feeding tube can also be removed. Details of the operative technic will not be discussed here, as this would be of interest only to laryngologists. It is our policy, before doing a laryngectomy, to attempt a short period of training during which the patient is taught to swallow and belch air from the esophagus. This greatly facilitates and shortens that trying postoperative period when the patient is again learning to talk. The rapidity with which these patients develop a voice and the excellent quality of their voices is astounding. This is far preferable to the use of an artificial larynx.

Our observation is that laryngectomized patients accept the problem of rehabilitation in a calm and determined manner, and in spite of their handicap they are a happy lot, thankful to be alive and anxious to do their bit in this world today. To date 81 laryngectomies have been done with no operative mortality. There have been some recurrences, principally cervical metastasis, but 85 per cent of our patients remain well without recurrence.

Those unfortunate persons who delay medical consultation until the lesion is too extensive for surgical intervention constitute the last group. They have been classified as the extrinsic type of carcinoma of the larynx which is seen all too frequently for the first time in the office. Consequently, little or nothing can be done for them. Radiation may prolong life but we can hardly hope for cure. This should not be considered a condemnation of radiation therapy for carcinoma of the larynx in general. Although we are convinced that surgical treatment offers the greatest number of permanent cures in properly selected cases, there has been sufficient evidence of success in similar circumstances following radiotherapy to warrant serious consideration of this means of treatment.

It is certain that if the general practitioner could more fully realize that life or death in cases of carcinoma of the larynx depends upon an early diagnosis, a more conscientious effort would be made to arrange laryngologic consultations for all persons suffering from hoarseness. Therefore, it cannot be too often repeated that persistent hoarseness is the one and only unfailing indication of early carcinoma of the larynx.

It is obvious that industry is going to have tuberculosis as a by-product. The Army will have tuberculosis as a by-product, and the civilian population is going to continue to feel the impact of both. This may severely tax bed facilities for there is no bed surplus if we use the beds the way they should be used.—*Harry M. Mustard, M. D., Nat. Tuberc. A. Tr.*, 1943.

HERNIATION OF THE INTERVERTEBRAL DISC

CHALMERS H. MOORE, M. D.
Birmingham, Alabama

Herniation of a nucleus pulposis, or protruded intervertebral disc, has become a subject of great surgical interest in the past few years. Voluminous contributions to the literature have been made by neurologic surgeons from the Massachusetts General Hospital, the Johns Hopkins Hospital and the Mayo Clinic, as well as numerous others, establishing the conditions as a definite neurosurgical entity and the exclusive etiologic factor in a great percentage of cases that were formerly called sciatica. It is the purpose of this paper to review the present status of the situation, evaluate the various reports, and to reach a sound conclusion as to the treatment of this painful, and often incapacitating, condition. The following observations are based on a review of the literature and a personal experience in 116 cases.

For practical purposes the intervertebral disc may be said to be composed of two elements. A circular cartilaginous structure binds the vertebral bodies together—the annulus fibrosus. This annular structure encircles the nucleus pulposus, which is contained in an envelope of fibrocartilage and is composed of a gelatinous, mucoid material, which, when put under pressure, obeys the physical laws of the incompressibility of fluids. When sudden pressure is exerted on the vertebral column, the nucleus acts in the manner of a shock absorber. Any solution of the continuity of the annulus, be it from trauma or degenerative change, can permit the nucleus to herniate. Once this occurs, pressure of the vertebrae on the annulus, without the protective elasticity of the nucleus, will cause the former to be severely traumatized and compressed between the vertebral bodies. The extruded material exerts direct pressure on the nerve root, forcing it against the bony lamina or the ligamentum flavum, causing pain and certain neurologic signs, dependent on the particular nerve root that is compressed. In the great majority of instances the 4th or 5th lumbar is the nerve involved. Cases have been reported in which the thoracic and cervical regions were the site of the herniation but this is rare. Over 95 per cent occur in the lower lumbar region, and are about equally distributed between the 4th and 5th interspaces.

In view of the fact that more than 60 per cent of patients give a positive history of back injury, it is reasonable to assume that every case of posterior protrusion of the disc is due to trauma. Because the injury is often of such a trivial nature, such as lifting a burden in a strained position, coughing, or sneezing, or swinging too hard at golf or tennis, it is reasonable to assume that those who do not give a history of injury have forgotten all about the incident.

The diagnosis can now be made with the greatest accuracy from the subjective story alone. This consists of pain in the lower back, radiating down the sciatic distribution of one, occasionally both legs. The pain is exaggerated by any sudden expiratory effort, such as coughing or sneezing. When this story is related, the diagnosis is almost certain. There are only two or three objective findings necessary for confirmation, but the absence of these does not necessarily exclude the condition as a strong probability. Characteristic, too, is the story of remissions of pain for varying periods of time. This is explained by the fact that the disc, already disintegrated and loosened, may recede, thus relieving pressure on the nerve root until it is extruded again. Remission of symptoms is characteristic and serves to distinguish root pain due to a herniated disc from that due to a tumor, the pressure of which is, of course, constant.

In a sizeable percentage of cases, paresthesias in that skin area supplied by the compressed nerve root are complained of. This is of localizing value.

Three objective signs are of value in confirming the tentative diagnosis suggested by the subjective history. They are Lasegue's sign, tenderness at the site of the herniation where deep pressure will produce pain down the course of the nerve, and absence of the Achilles tendon reflex. Motor weakness and sensory loss are seldom demonstrable.

Some cases do not give the clear cut subjective and objective findings thus described. It is in this group, and only in this

group, that spinal fluid studies and the injection of opaque material for spinograms should be considered. It is our feeling that lipiodol injected into the spinal canal is not injurious, but that it is rarely necessary. This opinion has only been reached in the recent past, as we formerly refused operation unless a filling defect could be demonstrated in the column of oil. Dandy brought out the fact that some discs did not protrude sufficiently far either laterally or posteriorly to produce a filling defect, and yet did protrude enough to produce nerve compression. Reasoning from that basis, many patients would be refused the benefit surgery has to offer if negative spinograms were obtained. So, it has been our practice at the Jefferson Hospital during the past year to utilize lipiodol only in cases in which there was some doubt as to the diagnosis. These have been less than 2 per cent.

From the Mayo Clinic, Love states, "When all findings point to the presence of a protruded disc and when the diagnosis can not be confirmed roentgenologically, we feel that we are justified in advising an exploratory operation, for, in our experience, this can be done without sacrifice of any bone and with a risk of 0.5 per cent, and the accuracy of our clinical diagnoses has been extremely high."

This too has been our feeling, but we do not feel that an exploration has been complete unless there has been a careful inspection of the area about the suspected root or roots. Our experience has been that this can not be done without the removal of the ligamentum flavum and a small portion of the lamina overlying the nerve. This procedure in no wise weakens the weight bearing function of the vertebral column and produces no disabling effect. We feel very definitely that an exploratory procedure that does not offer ample space to explore may be fruitless of any profit to the explored individual.

Both orthopedists and neurosurgeons are now agreed that protrusion of an intervertebral disc is a frequent cause of low back pain radiating down the sciatic distribution. What there seems to be some disagreement about is the time at which a patient should have the disc removed surgically. It is said in many quarters that a patient should not be subjected to surgery until all orthopedic and physiotherapeutic measures have been tried first. If this treatment does not produce relief, then surgery.

At first this might have been good judgment. But now that results following the removal of the disc are becoming known in many hundreds of cases, from many different clinics, one is forced to ask the question, why delay the relief surgery has to offer, once the diagnosis is well established? Time and time again in our series patients have come after months—frequently years—of treatment that has been of no avail. Why, one asks, should relief be denied this long? To be sure, surgery does not cure all of these patients, but the percentage of relief of symptoms is certainly very high and warrants much earlier interference than the average patient is now receiving.

The patient himself should be an active partner in making the decision as to whether he should be operated upon or not. After all, he is the most interested participant and he alone can correctly evaluate his suffering. It is our custom to explain the condition as well as possible by actual illustrations. He is then told that on occasion the symptoms undergo spontaneous remission without any treatment. He is also told about orthopedic measures and, finally, that operation will in all probability produce quick and permanent relief. He is frankly told of the possibilities and percentage of failure. With this information he is placed in a position to intelligently choose for himself the type of therapy he wishes. His decision usually is an indication of the degree of pain he is having.

We do not wish to give the impression that surgery is immediately indicated in all cases, but we do feel very strongly, based on experience in actual cases, that far too much time, involving much needless loss of time to the patient, is used up in trying so-called conservative measures before resorting to surgical removal of the object that is exerting direct pressure on the nerve root. How can anything except removal of this displaced tissue produce relief? This removal can only be accomplished by a spontaneous recession of the protruded disc or by surgical removal.

In our series of 116 cases the results are as follows:

Complete failure to relieve: 6 cases, in two of which compensation may have been a factor.

Recurrences: 2 cases, one on the opposite side, same level; the other an interspace higher up—L 4.

The six complete failures can not be explained satisfactorily. All had definite protrusions. Compensation was a factor in two cases, but one does not like to use this to explain a failure. Since starting this paper, however, these two cases have become free of symptoms following settlement of their claims.

In the recurrences is also listed one of the failures. This patient had no relief following her first operation and six months later at the 4 L interspace another protrusion was removed, the first one being at L 5. Both were definite and marked protrusions. The patient states now that her leg is "numb" and that the pain is worse than prior to her operations. This must be called poor surgery, for want of a better explanation.

The other recurrence was in a man who was dramatically and promptly relieved of pain down the left sciatic distribution. While convalescing from the operation he experienced "exactly the same pain in the same place, except on the right side." This grew progressively more severe and six weeks following the first operation a protruded disc was removed from the same level on the opposite side, just as marked as at operation I. He has been relieved following the second operation.

Relief of pain does not always occur promptly following operation, but it certainly does in the majority of instances. When not prompt, usually 2 to 3 weeks are required for complete freedom. The patient's own mental attitude seems to play a definite role in his recovery, as it does, of course, in almost any other condition.

The operation for removal of a protruded disc presents very little difficulty to one used to the technique of neurologic surgery. The two chief considerations are exposure of the protrusion without injury to the cauda equina by retraction and, secondly, hemostasis. The latter not infrequently poses quite a problem when one encounters the large venous sinuses running along the anterior wall of the spinal canal. Close proximity of these to the emerging nerve root precludes the use of the coagulation unit and taxes the operator's ingenuity. A powerful suction apparatus that is always in working order is absolutely essential.

In view of the absence of mortality, and the relief obtained in a very large percentage, over 95 per cent, we have reached the conclusion that, once the diagnosis is definitely determined, surgery is indicated without further loss of time, particularly after the patient is fully informed and is permitted to participate in the decision.

THE TREATMENT OF CHRONIC INTESTINAL INDIGESTION WITH VITAMIN B COMPLEX AND LIVER EXTRACT

J. H. BAUMHAUER, M. D.
Mobile, Alabama

I am convinced that we see many cases of chronic intestinal indigestion that may be handled satisfactorily by treating them along the same lines as celiac disease. With this in mind I came upon an excellent article by May, McCreary and Blackfan,[1] and have adapted their treatment of celiac disease to the cases of chronic intestinal indigestion that I have seen.

Celiac disease has long been recognized as "a kind of chronic intestinal indigestion" affecting infants and children. The cause has not been generally known although it has now become accepted that the primary fault is a defective absorption from the intestine, particularly of fats and carbohydrates, but there appears to be no positive data to explain the pathogenesis. Only the proteins of the food are absorbed in normal fashion.

These patients show abnormal gastrointestinal motility. Inositol and nicotinic acid are the members of the vitamin B complex directly concerned with gastrointestinal motility, and it is believed that the balance

Read before the Association in annual session, Montgomery, April 18, 1944.

1. May, C. D., McCreary, J. F., and Blackfan, K. D.: J. Pediat. 21: 289, 1942.

or ratio of nicotinic acid or similar compounds to inositol is the nutritional factor which determines hypo- or hypermotility.[2] Because this picture of abnormal peristalsis resembled that found in vitamin B complex deficient animals, a crude source of the B complex was given by mouth. Patients with mild cases responded most markedly, but those with more severe, longer standing symptoms responded little or not at all. Reasoning that defective absorption prevented these patients from receiving adequate amounts of the vitamin, these investigators used intramuscular injections of a crude source of vitamin B complex and crude liver extract on alternate days. Acute infection with fever interferes seriously with this form of treatment, and clearing up of foci of infections, such as abscessed ears and furunculi, is a necessary part of the treatment.

Research has not shown as yet the means by which absorption from the intestinal tract is helped by the combination of crude extract of liver and the B complex of vitamins. Impaired intestinal absorption may be the result of a deficiency of more than one factor. Complete improvement could not then be expected until all the missing factors were restored, as when the combination of crude extract of liver and B complex of vitamins was given. Patients with achlorhydria or severe small intestinal changes respond best to parenteral administration of vitamin B complex and crude liver extract.[3]

These children exhibit loss of appetite, failure to gain in weight, late period of sitting, standing and walking, fretfulness, aversion to normal play, diarrhea, poor sleeping habits, and repeated respiratory infections. The nervous symptoms are many and varied. The child is often bright, but he is irritable, languid and easily fatigued. The hands and feet are cold. Sleep is usually restless, with frequent grinding of the teeth, outcries, dreaming, and, not infrequently, night terrors. Tetany or convulsions may develop due to the low calcium content of the tissues consequent upon failure of absorption of this mineral.

On physical examination there is noted lack of subcutaneous fat, poor muscle tone, pallor, bad posture, labial sores, rapid heart action, red tongue, square head, enlarged wrists, beaded ribs, and the presence usually of a large abdomen.[3] Hypoproteinemia and consequent edema may result.

Chronic intestinal indigestion begins most often in the first year of life, and poor hygienic conditions, prematurity and immaturity predispose to it. Of all causes, however, an unsuitable diet is the most influential and common. Lepore and Ross[4] found evidence of thiamine, riboflavine, and nicotinic acid deficiency in badly neglected, underfed children, living mostly on refined carbohydrates. Sometimes one must be satisfied with the explanation that the food is not at fault, but the infant has constitutionally poor digestive power, or has acquired it from repeated attacks of acute indigestion due to improper food, parenteral infection or sometimes from weakened digestion due to prolonged starvation. Occasionally the symptoms are actually allergic rather than digestive in nature.[5]

These cases must all be studied individually, and conditions such as tuberculosis, lues, renal rickets and pancreatic disease must be carefully ruled out. This treatment is not of apparent value in the management of the above diseases.

DISCUSSION

Thirty cases are included in our study. The injections were given weekly: ¼ cc. of B complex in one buttock and ½ cc. of liver extract in the other. All of these children were treated in the office, and, because of transporation difficulties, weekly visits only could be made. No doubt the response would have been more striking had the injections been given daily or at least twice weekly. The skin was prepared with alcohol, and the injections were given deep in the gluteal muscle. These patients were irritable for a day or so following the injections, but in no case was it necessary to postpone the weekly injections. No lasting deep induration or abscess formation occurred.

The treatment was augmented by the use of liver extract and vitamin B complex, and all the essential vitamins by mouth, as well

2. Martin, G. J., Thompson, M. R., and De Carvajal-Forero: J. Pediat. 8: 290, 1936.
3. Subcommittee on Medical Nutrition: J. A. M. A. 118: 918, 1941.
4. Lepore, M. J., and Ross, G.: J. A. M. A. 117: 918, 1941.
5. Griffith and Mitchell's Pediatrics, 1941, 390.

TABLE 1

Case	Age (Months)	Sex	Dosage Each Week Intramuscularly	No. of Injections	Average Gain or Loss in Weight Each Week	REMARKS
1.	17	Male	1 cc. L. E. 1 cc. Vit. B	5	9 oz.	Excellent improvement. Child more alert after several injections. Appetite greatly improved.
2.	14	Male	2 cc. L. E. 4 cc. Vit. B	8	5 oz.	Marked secondary anemia since birth. Responded well.
3.	18	Male	1 cc. L. E. 1 cc. Vit. B	6	9 oz.	Improved, and a much happier infant.
4.	16	Male	1 cc. L. E. 1 cc. Vit. B	7	8 oz.	Tetany and marked rickets. Child continues to be extremely nervous.
5.	24	Female	2 cc. L. E. 4 cc. Vit. B	10	6 oz.	Diarrhea past 4 months. Improvement in diarrhea, and general condition.
6.	17	Female	2 cc. L. E. 4 cc. Vit. B	6	6 oz.	No gain in weight for past 8 months before treatment. No free hydrochloric acid in stomach. Disposition after 2nd injection improved, and child wanted to play.
7.	21	Male	1 cc. L. E. 2 cc. Vit. B	6	6 oz.	Multiple vitamin deficiency. Response good.
8.	31	Female	1 cc. L. E. 2 cc. Vit. B	6	5 oz.	Diarrhea for 2 months. No gain in weight for year before treatment.
9.	18	Female	2 cc. L. E. 4 cc. Vit. B	6	6 oz.	Frequent colds. These continued after general condition improved.
10.	8	Male	1 cc. L. E. 2 cc. Vit. B	9	5 oz.	Birth weight 8 lb. Weight at 8 months 9 lb. Tissues flabby. Greatly distended abdomen. Celiac type stools. Improvement dramatic.
11.	4	Female	2 cc. L. E. 4 cc. Vit. B	7	12 oz.	Improved.
12.	13	Female	2 cc. L. E. 4 cc. Vit. B	4	0	Recurrent otitis media (suppurative). No improvement.
13.	17	Female	2 cc. L. E. 4 cc. Vit. B	6	Lost 3 oz.	No improvement.
14.	28	Male	2 cc. L. E. 4 cc. Vit. B	5	Lost 3 oz.	Developed pertussis shortly after injections were started. No improvement.
15.	16	Female	2 cc. L. E. 4 cc. Vit. B	6	3 oz.	Improvement slight.
16.	6	Male	2 cc. L. E. 4 cc. Vit. B	12	6 oz.	Ileocolitis and severe dehydration. Improvement excellent.
17.	9	Female	2 cc. L. E. 4 cc. Vit. B	6	4 oz.	Chronic intestinal indigestion due to starvation accompanied pertussis at 3 months of age. Results good.
18.	24	Female	2 cc. L. E. 4 cc. Vit. B	6	4 oz.	Improved.
19.	23	Female	2 cc. L. E. 4 cc. Vit. B	7	7 oz.	No gain in weight for year before treatment.
20.	15	Female	2 cc. L. E. 4 cc. Vit. B	6	9 oz.	Diarrhea past 3 months. Improvement good.
21.	10	Male	2 cc. L. E. 4 cc. Vit. B	6	10 oz.	Multiple vitamin deficiency. Improvement excellent.
22.	7	Female	2 cc. L. E. 4 cc. Vit. B	3	8 oz.	In hospital for 3 months with empyema. Discharged in bad condition. Improvement good.
23.	16	Male	2 cc. L. E. 4 cc. Vit. B	6	7 oz.	Improved.
24.	15	Female	2 cc. L. E. 4 cc. Vit. B	6	2 oz.	Slight gain in weight, but general condition much improved.
25.	10	Male	2 cc. L. E. 4 cc. Vit. B	6	0	No gain in weight. General condition improved.
26.	4	Male	2 cc. L. E. 4 cc. Vit. B	6	6 oz.	Multiple vitamin deficiency.
27.	13	Female	2 cc. L. E. 4 cc. Vit. B	6	Lost 2 oz.	Child's father had active pulmonary tuberculosis. Lived at home. Tuberculin test and x-ray of child's chest on 6 28 43 negative. Advised removal of child or father from home, but this was not done. Baby died Feb. 1944. Probable cause of death tuberculous bronchopneumonia.
28.	18	Female	2 cc. L. E. 4 cc. Vit. B	6	9 oz.	Hypoproteinemia with edema.
29.	10	Female	2 cc. L. E. 4 cc. Vit. B	6	4 oz.	Improvement slight.
30.	6	Male	2 cc. L. E. 4 cc. Vit. B	4	6 oz.	Improved.

as a liberal diet. In cases of iron deficient anemia iron too was given.

Improvement was noted usually very early after treatment was started. It was evidenced by the improved disposition of the child. Instead of a whiny, fretful infant, the baby became more easily handled, more active, and more alert to his surroundings. Nearly all of these children gained weight, and in doing this the tissue turgor improved. If they exhibited anemia, this condition improved also.

Several failures in our cases were noted. One child (case 27) was a tuberculous con-

tact, and although a tuberculin test and an x-ray of her chest were negative at the beginning of treatment, this child continued to live at home with her tuberculous father. This baby died 4 months later, apparently from tuberculous bronchopneumonia. We observed also that in the presence of infection our results were not good. This is illustrated by case 12. This infant had recurrent suppurative otitis media. She failed to gain satisfactorily, and continued to be a cross, fretful and dull infant. It is to be expected that children with any type of suppurative condition will not respond well to this or other supportive treatment. Children with an acute intercurrent infection responded poorly. Case 14 developed pertussis shortly after treatment was begun. His improvement was very slow and unsatisfactory.

This treatment is offered not as a cure-all for every child who is apparently not gaining weight, but when the cases are carefully selected and intelligently handled good results may be almost uniformly obtained.

SUMMARY

1. Thirty cases of chronic intestinal indigestion treated by weekly intramuscular injections of vitamin B complex and crude liver extract are presented.

2. Good results were evidenced by gain in weight, and by the child's improved disposition and physical condition.

3. Failure resulted when these children had an acute, chronic or intercurrent infection.

Aging—Treatment of the aged has two aspects —the treatment of the aging person, and the treatment of disease in the aged. Treatment of the aging person demands knowledge of the normal processes of senescence, of the changes in function and structure that come with the years, and of the manner in which they modify the potentialities for living. The diseases that we encounter in the aged are the same diseases that we see in younger persons, but often their manifestations are somewhat different in the aged, for the aging body reacts differently to the noxious processes.

Most of the diseases of the aging organism are popularly considered and termed degenerative diseases. This implies that the disease is due to the gradual wearing out of the several tissues of the body, that the disease is in essence evidence of aging; that it is an inevitable process of senescence. Were this so, we would have to accept the invalidism of aging as part of our inescapable heritage, and consider medicine as powerless to halt its progress, or to restore the worn out dying organism.—*Boas, New Orleans M. & S. J., Aug.* '44.

Diabetes—Despite the relatively high degree of dissemination of medical knowledge in this country, a disappointingly small percentage of diabetic patients receive insulin. From closely observed groups we know that 75 to 80 per cent of patients will benefit from its use. All too often the doctor follows the request of the patient to avoid insulin if at all possible, whereas actually a much better policy is to give insulin to every diabetic patient unless some good reason exists for not doing so. That good reason may be of course, the fact that the diabetes is so mild that with slight restriction of diet, hyperglycemia and glycosuria are controlled. Other patients with the milder degrees of diabetes will need one dose of protamine zinc insulin given daily before breakfast. Those with a more severe grade will need in addition to that dose an accompanying dose of rapidly-acting insulin, either regular or crystalline. There are very few patients indeed whose diabetes can not be satisfactorily controlled by protamine zinc insulin alone, or in combination with rapidly acting insulin, all injections being made in the morning before breakfast with no more insulin during the rest of the day. This method of administration appeals to the patient because it allows him to make all injections at one time with no more inconvenience until the following morning.

Recalling that protamine zinc insulin has its action for at least twenty-four hours, one uses that dose which will provide a satisfactory blood sugar and a sugar-free urine daily before breakfast. Provided the patient's diet and activities are relatively constant from day to day, and barring the presence of infection, it should not be difficult with most patients to keep the fasting blood sugar within a relatively small range with values preferably below 140 mg. per 100 cc. and without fail below 200 mg. per 100 cc. With patients with the milder degrees of diabetes, a single injection of protamine zinc insulin which provides for a satisfactory blood sugar and a sugar-free urine before breakfast will, in most instances, accomplish satisfactory control of the condition during the rest of the day. However, with patients with the severe grades, despite control in the fasting state, there may appear considerable hyperglycemia and much glycosuria after breakfast and during the rest of the day if protamine zinc insulin is used alone; it is to these patients that the accompanying dose of rapidly-acting insulin is given before breakfast. The best index as to the size of the dose of regular or crystalline insulin is found in the blood sugar and urinary sugar tests just before the noon meal. Here again the attempt should be to use that dose which will provide a satisfactory blood sugar and a urine which is free from sugar or nearly so.—*Marble, Texas State J. Med., August* 1944.

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BLOOD SEDIMENTATION IN DIARRHEA

"A trying problem that not infrequently faces the consulting gastroenterologist is to pick out quickly and surely from the many cases of functional diarrhea those few in which there is something organically wrong in the bowel, such as a regional stenosing enteritis, a beginning ulcerative colitis, a tuberculous or a cancerous lesion or a bacillary dysentery. During the last few years we have become more and more impressed by the fact that the blood sedimentation rate is of great help in this regard. If the figure is low, there is little chance that organic disease will be found, while if it is high, more than 40 or 50 mm. in an hour (Westergren method), there almost certainly is something seriously wrong with the bowel. This observation has been made by others but it has not yet received the wide publication that it deserves and its importance and usefulness are not yet generally known.

"On several occasions, when the appearance of the patient and the nature of the story led us to expect a nervous cause for a diarrhea, the finding of a high sedimentation rate immediately put us on our guard and caused us to insist that a careful roentgenologic study be made of the small bowel, a study that eventually revealed a previously missed lesion. On the other hand, we have had cases of diarrhea in which symptoms, such as fever, prostration and abdominal pain strongly suggested the presence of organic disease. Sometimes also the roentgenologic picture was suggestive of serious trouble but the finding of a low sedimentation rate warned us that we had better not explore the abdomen. In a few cases of this type in which, because of the seriousness of the illness or the insistence of the patient, exploration was made, nothing wrong was found."

These paragraphs are taken from the brief but excellent discussion of this subject by Alvarez and Bargen.[1] That the sedimentation rate is of great value in disclosing the presence of inflammation has long been known, but, as the authors point out, it has not been used as much as it should be in helping us to differentiate the functional and organic diarrheas. And the conscientious practitioner, who wishes to do everything possible for his patients and who does not suffer from *furor operandi* will welcome any harmless procedure that will aid him in making the correct diagnosis. In gastroenterology it behooves the physician to be especially wary for it is certainly true that functional gastroenterologic disorders are increasing. We frequently read that this increase is due to the stresses and strains of the troublous times in which we live and there is certainly a great deal of evidence to back this statement up. Periods of excessive and abnormal nervous tension and prolonged overwork will most certainly leave their mark upon many of us. But it is interesting to note the variations in the manifestations of these nervous disorders from time to time. During and immediately after World War I we saw and read a great deal of effort syndrome, neurocirculatory asthenia and other forms of cardiovascular disturbance. Now, well into World War II, we are seldom confronted with these, but we find instead a sharp upturn in the incidence of gastric ulcer and of all the myriad forms of the functional gastrointestinal disorders. Apparently no satisfactory explanation of this shift from the cardiovascular to

1. Alvarez, W. C., and Bargen, J. A.: The Value of the Blood Sedimentation Rate in Recognizing Diarrheas Due to Organic Disease, Proc. Staff Meet., Mayo Clin. 19: 255 (May) 1944.

the gastroenteric locale has so far been forthcoming.

THE SPARKS-PARTLOW PORTRAIT FUND

The committee appointed by the President of the Association to raise funds sufficient to employ an artist to paint portraits of Governor Chauncey Sparks and Dr. W. D. Partlow, responsible in such great measure for the establishment of Alabama's Four-Year Medical School, to be presented to the school and placed in its library, has addressed the following letter to the members of the Association.

To Members of The Association:

Dear Doctor:

We know that you rejoice with us in the knowledge that Alabama—after waiting a long time—is to have one of the greatest medical schools in the United States. Two men, Dr. W. D. Partlow and Governor Chauncey Sparks, have done most to reestablish the Medical College of Alabama.

Some years ago the Medical Association of Alabama created a committee to promote the establishment of a four-year medical school. It is well known that Dr. Partlow, as Chairman of the Committee on a Four-Year Medical School, worked faithfully and unceasingly, year after year, moulding public opinion in Alabama to provide state funds to establish a first-class medical school. When the Legislature met last January the members of the House of Representatives and State Senate were so well informed of the need to educate doctors to practice medicine in Alabama that they voted unanimously to appropriate a million dollars for buildings and equipment for the school, and $366,000 annually for its maintenance. It was Dr. Partlow, a medical statesman, who wrote the bill that was enacted into law providing for the four-year medical school, including a scholarship of $400.00 annually to a student from each county in Alabama.

Governor Chauncey Sparks demonstrated his statesmanship when he appealed to the Legislature to appropriate money for the new medical school, and without his active cooperation the medical school could not have been established. Indeed Governor Sparks was enthusiastic in his support of the bill providing for the school. Our Governor has the vision of a great medical centre being created in and around the new school that will provide physicians—so badly needed—and also nurses, sanitary engineers, technicians and other public health workers who will carry a message of health to all classes of Alabama citizens, particularly in the rural districts.

Gratitude is an attribute of Alabama doctors, and at the Montgomery meeting of the State Association two resolutions were unanimously adopted providing for the appointment of a committee to raise funds sufficient to employ a first-class artist to paint portraits of Dr. Partlow and Governor Sparks. The portraits are to be placed in the library of the new school when it is opened.

It is the hope of the Committee that every member of the Medical Association of Alabama will want to contribute to the portraits, as an expression of their appreciation for the unselfish services of the two men who did most to found the new four-year medical school. If each member of the Association will contribute at least two dollars, sufficient money will be raised to pay for the portraits and frames. Will you not send your contribution in the enclosed envelope, addressed to Dr. Douglas L. Cannon, Secretary-Treasurer of the Association, at 519 Dexter Avenue, Montgomery? Please do so at your earliest convenience.

Fraternally yours,
Harvey Searcy, Chairman, Tuscaloosa, Ala.
Wilbur M. Salter, Anniston, Ala.
Fred Wilkerson, Montgomery, Ala.
J. D. Perdue, Mobile, Ala.
Seale Harris, Birmingham, Ala.

At this writing contributions of $899.50 have been received and expressions accompanying the contributions have been heartening. These are examples:

I will give more if needed.

Enclosed please find check for . . . as my contribution toward the painting of the portraits of Governor Sparks and Doctor Partlow. I am only too glad to do this as I think it very appropriate.

Good work!

With pleasure.

Your letter telling of completion of the plan to establish a medical college in Birmingham is good news, and I gladly contribute to the cause you are sponsoring.

I think this is a fine gesture to two fine men and I am glad to make a contribution.

Glad to contribute.

Think this is a fine move.

It is a pleasure to do this. If more is needed, call on me.

I think the project is a fine thing to do, and I am glad to contribute my share and more if it becomes necessary.

I deem it a privilege and a pleasure to contribute to this fund as an expression of my appreciation for the unselfish services of these two men who did most toward founding the new Four-Year Medical School.

It is indeed a pleasure to participate in the oil paintings of Dr. Partlow and Governor Sparks. The establishment of a Four-Year Medical School should be appreciated by every Alabama doctor.

There is nothing which affords me greater pleasure than to help our profession show its great appreciation of the unceasing efforts of the two outstanding men above mentioned in the great and much needed advance of facilities and teaching of medical science in our beloved state.

The committee appreciates these expressions and the several contributions that have been received. It hopes that every member of the Association will respond to the appeal to the end that the Governor and Dr. Partlow may be honored in the way indicated.

STATE DEPARTMENT OF HEALTH

BUREAU OF ADMINISTRATION

B. F. Austin, M. D.
State Health Officer

BANTING AND THE DISCOVERY OF INSULIN

Three hundred and forty-five Alabamians succumbed to diabetes last year. Only eight forms of illness caused a greater loss of life in this State during that twelve-month period than this one. It was responsible for more than 21 times as many Alabama deaths as typhoid fever, considerably more than twice as many as whooping cough, more than eight times as many as diphtheria, more than one-fourth as many as tuberculosis, more than five times as many as malaria, nearly as many as syphilis, nearly one-fifth as many as cancer and nearly one-fourteenth as many as heart disease, by far the greatest of all enemies of human life.

Moreover, diabetes is an increasing menace to the health and lives of Alabamians as well as of Americans generally. Although those who succumbed to it in this State in 1943 were fewer than those doing so in several other recent years, the long-time look shows plainly that diabetes mortality is on the increase. In 1925 this State's diabetes deaths numbered 167 and its diabetes death rate was 7.8 per 100,000 population. In 1935 the State's diabetes deaths totaled 258 and its diabetes death rate stood at 9.4 per 100,000 population, considerably above the 1925 rate. What the 1945 deaths and death rate will be remains in the cocoon of time, but the provisional 1943 figures are at hand, showing the already mentioned 345 diabetes deaths and a diabetes death rate of 11.7 per 100,000 population. Thus in less than 20 years Alabama's diabetes deaths increased about 107 per cent and its diabetes death rate exactly 50 per cent.

As unfortunate as this increasing diabetes mortality is, there is no doubt that it would have been much greater but for the tireless labors and genius of Dr. Frederick Grant Banting. His part in the discovery of insulin won for him a share in the 1923 Nobel Prize and won for a large segment of the human race a chance not only to escape immediate or early death but also the privilege of living out their normal span of years, with a reasonable enjoyment of life's normal pleasures and activities. In the generous freemasonry of medicine there is little place for national jealousies, for the true medical mind is an international mind seeking and welcoming remedies for humanity's ills wherever they may be found. So, while it would be a source of pride to us Americans to know that the discoverer of life-saving insulin was one of us, we, like the people of all nations, rejoice greatly in his achievements and spend little time in regret that his birth occurred north of the Canadian-United States boundary, rather than south of it. Born on November 4, 1891 on his father's Ontario farm, he came to know hard physical labor as intimately as many an Alabama farmer's son has come to know it. At the usual age he entered the village school at Alliston, Ontario, where his scholastic record was more suggestive of the steady plodder than of the brilliant future man of science. His grades are said to have been only about average, but he won during those elementary and high school days a sturdy reputation for trustworthiness and industry.

At the completion of his high school course, this future Nobel Prize winner became a student at Victoria College, affiliated with the well known University of Toronto. Having developed a decided interest in the healing art, he entered that institution's School of Medicine in 1912 with the idea of preparing himself as quickly as possible for the practice of his profession. But his youthful plans were destined to be rudely disarranged. For even as he listened to his first medical lecture and fought against the terror of the operating room which is the nightmare of beginning medical students forces were taking shape across the broad Atlantic, and the stage was being set for what has since become known as the first World War. A few months after its outbreak in August 1914, he enlisted in the Canadian Army's Medical Corps and was soon on duty as a non-commissioned officer at a military hospital on the Canadian side of Niagara Falls. Later his commanding officer induced him

to return to the University of Toronto and complete his medical training in order that he might be of greater service to his country. Receiving his medical degree in December 1916, he went overeas soon afterward and was on duty in France as a member of a field ambulance outfit near Cambrai when he received two conspicuous marks of distinction, a war wound and the Military Cross.

After the Armistice Dr. Banting received a senior interneship in surgery at the Hospital for Sick Children in Toronto, and there he had an opportunity to obtain valuable experience in the field of child care. That phase of his education at last over—the final phase—he began the practice of medicine in London, Ontario. Finding himself with more time on his hands than patients, he accepted an appointment as a part-time assistant in the Department of Physiology of the University of Western Ontario, situated in his home town.

That was indeed a fortunate association, although at the time, Dr. Banting undoubtedly would have regarded the necessity for it as most unfortunate. For while preparing his lecture on the physiology of the pancreas on the night of October 30, 1920, he became interested in an article published in a medical journal he had just taken from the mail. This article told of the experimental work that had been done by Dr. Moses Barron. The nature of those experiments is too technical for the average layman to understand, but suffice it to say that from that article and his earlier knowledge of diabetes Dr. Banting began to wonder if it would not be possible to prepare from that part of the pancreas known as the islands of Langerhans an extract which would prove effective in the treatment of diabetes, characterized by the presence of sugar in the urine. Others had tried to develop such a product, but without success. It suddenly occurred to him that night that perhaps their failure had been due to their mixing what are known as the external and internal secretions from the pancreas, bringing a condition in which they were working at cross purposes, one undoing the work of the other.

Dr. Banting was not the kind of person to have an idea and do nothing about it. At his first opportunity he made a trip to Toronto to explain his theory to one of the faculty members of his alma mater, Professor J. J. R. Macleod. It was not an easy task to persuade this practical man of science that he, a virtual new-comer to medicine, could do what older and famous men had failed to do. But the young enthusiast kept pleading, and at last Professor Macleod gave in. His giving in consisted of a promise to provide Dr. Banting a suitable place to work, an assistant, and some dogs upon which they might experiment.

The assistant whom Professor Macleod had promised him turned out to be Charles H. Best, a most fortunate selection. But he was not there at the start, and Dr. Banting had to go it alone for a while. After the former's arrival, however, the two men became a well coordinated team. Neither received any compensation, and both worked like beavers. They met considerable difficulty and failure during those early months but went ahead bravely and without losing courage or hope. Improvements in their operating technique brought a belief that their efforts would prove more successful from then on. And in that they were right. After inducing a case of diabetes in one of their experimental dogs, they set about curing it by the injection of an extract which they had prepared from pancreas, the acinus cells of which had been destroyed by tying off the pancreatic ducts. Their happiness was unconfined when they saw the results: The animal, which formerly had been almost at the point of death, recovered quickly and began wagging its tail as contentedly as though nothing had happened. Its blood sugar count dropped sharply too.

But the problem of diabetes control was not yet completely solved. Under the method they had developed, the preparation of insulin was slow and difficult. Inspired by an article he had read some time before in a medical journal, in which a well known authority had made the observation that there were more islet cells—from which he made his insulin—in a very young baby than in an adult, Dr. Banting began preparing it from the pancreas of unborn calves, which he was able to obtain in large quantities and at no cost from a convenient slaughter house. Later he began using another technique for obtaining his precious insulin. This enabled him to get it in large quantities from the pancreas of adult animals.

In time the new product was tried upon three diabetes patients at the Toronto General Hospital. The results, on the whole, were successful, as the treatment brought a considerable drop in the amount of sugar in the patients' blood and removed it entirely from the urine. However, it was agreed that additional refinements were needed and, to obtain them, Drs. Banting and Best were joined in their research by Professor Macleod, who, it will be remembered, had made it possible for Dr. Banting to start his experiments. In addition, the University's entire laboratory staff turned its attention to this work. Those concentrated labors bore rich fruit, and soon these earnest workers began crystallizing pure insulin. The long fight had at last been won, and the bright sunlight of a new day—a day of hope, long life and normal living—broke over the landscape for millions of diabetes victims the world over.

Dr. Banting and his associates soon found themselves world figures. He and Professor Macleod won the 1923 Nobel Prize in medicine, which they shared with Dr. Best and Dr. J. B. Collip, who had joined them in 1921. To relieve Dr. Banting of financial responsibilities which might interfere with his future research, the Dominion of Canada voted him an annual income sufficient for his normal needs. The University of Toronto established the Banting and Best Department of Medical Research and named Dr. Banting as its first director. The Banting Institute of Medical Research was launched in 1930, and about four years later the man for whom it was named became Sir Frederick Grant Banting as a result of being knighted by King George V of England.

"For a man of Banting's shyness and modesty this public acclaim could not help but be embarrassing," wrote the anonymous author of a biographic leaflet published by the Metropolitan Life Insurance Company. "In the popular mind he had become a miracle man, and half the world was agape for a new miracle. It took unusual courage to settle down to spadework on important but relatively long-range researches."

But that is what he did. Aided by a number of fellow-workers, he carried on valuable research in the field of silicosis prevention and several other important fields of health-protection. He was thus engaged when the second World War interrupted his regular work just as the first World War had interfered with his medical studies.

With the outbreak of war, however, he readily put aside those peacetime labors and devoted himself to war medicine. Having a special interest in the peculiar medical problems of wartime aviation, he became chairman of a special committee for medical research in aviation.

Death, which had missed him so narrowly in France about a quarter of a century before, found him a shining mark in 1941. In February of that year he started a trans-Atlantic flight in a Canadian bomber and got as far as the east coast of Newfoundland. Then something went wrong and the plane crashed. Before he succumbed to his injuries, this man who had helped save so many lives did what he could to save the lives of a few more, his fellow-passengers and crew-members. When rescue workers found what was left of the bomber they noticed that he had spent his last minutes of life rendering first aid.

This Canadian country boy who became one of the world's greatest men of medicine toiled, met discouragement and dreamed of great achievements when they seemed far beyond his grasp. Humanity has reason to be grateful that he believed so firmly in his philosophy of success.

BUREAU OF PREVENTABLE DISEASES

D. G. Gill, M. D., Director

PREVALENCE OF COMMUNICABLE DISEASES IN ALABAMA

1944

	May	June	E. E.* June
Typhoid	10	5	27
Typhus	35	43	25
Malaria	152	314	515
Smallpox	3	0	1
Measles	895	312	335
Scarlet fever	33	20	29
Whooping cough	133	122	206
Diphtheria	15	5	25
Influenza	114	61	49
Mumps	432	173	85
Poliomyelitis	3	8	10
Encephalitis	1	1	2
Chickenpox	82	24	44
Tetanus	1	3	6
Tuberculosis	218	277	254
Pellagra	2	2	54
Meningitis	37	22	9
Pneumonia	294	181	144
Trachoma	0	0	0
Tularemia	0	0	0
Undulant fever	15	3	5
Dengue	0	0	0
Amebic dysentery	4	3	0
Cancer	164	173	0
Rabies—Human cases	0	0	0
Positive animal heads	19	15	

As reported by physicians and including deaths not reported as cases.

*E. E.—The estimated expectancy represents the median incidence of the past nine years.

BUREAU OF MATERNAL AND CHILD HEALTH

J. S. Hough, M. D., Acting Director

U. S. CHILDREN'S BUREAU AND THE EMIC PROGRAM

Contributed by
Lorena Guy, Secretary

The Children's Bureau was organized by legislative action in 1912. It was placed under the Department of Labor and Commerce since the U. S. Public Health Service declined control of it. One year later, when the split came in Labor and Commerce, the Children's Bureau became a part of the Department of Labor; therefore it is one year older than the Department of Labor. During its thirty years, the Bureau has had only three chiefs. It began with a staff of fifteen and has grown until now there are 350 members, each, with the exception of the chief, under Civil Service.

The purposes of the Children's Bureau have always been as follows:

1. To investigate and report upon all matters pertaining to the welfare of children and child life.
2. To administer the child welfare and maternal welfare provisions of title V, parts 1, 2, and 3, of the Social Security Act.
3. To administer the child-labor provisions of the Fair Labor Standards Act.

The accomplishments and contributions of the Bureau have been noteworthy in finding needs and helping to solve them; for example, improvement in infant and maternal mortality rates. The recent work of the Bureau has been largely administrative. It has attempted to set and uphold standards in the states.

The most recent function of the Children's Bureau has been the Emergency Maternity and Infant Care Program. In March of 1942 the State and Territorial Health Officers recommended that state health agencies, particularly in areas where Army camps are located, develop plans to finance from maternal and child health funds the medical and hospital obstetric and pediatric care needed by wives and children of men in military service, and also recommended that substantial increases be made in appropriations for grants to states for maternal and child health services to enable the Children's Bureau to cooperate fully with the states in supplementing these programs during the war. At that time maternal and child health funds had been used for the care of soldiers' wives in only two states, both in the West. The number of enlisted men at that time was approximately two million.

During the following year, twenty-nine state health departments were caring for wives and infants of enlisted men from Funds A and B. The estimated number of enlisted men in all branches of the armed forces had increased during the year from two million to ten million.

The program continued to grow until at the present time plans are in operation in all forty-eight states, Alaska, Hawaii, Puerto Rico and the District of Columbia.

Congress in March 1944 made the first appropriation to the Children's Bureau for grants to the States for this specific purpose. For the fiscal year 1944, $29,700,000 was appropriated; and for the fiscal year 1945, $42,800,000.00 was appropriated.

The purpose of Congress in starting the program was to benefit the morale and peace of mind of the soldiers on the fighting fronts. Other results, such as raising standards uniformly, are important but not first in the eyes of Congress.

The program has developed gradually along the lines of local-federal relationships. At first it started out meekly; then it passed through a stage of "over-sophistication." This was common to all states. Work began piling up, letters had to be written, hospitals had to be inspected, applications were pouring in, and 250,000 patients were already being served. By this time facts were available on which definite ideas could be based, and the states found it necessary to compare problems and seek satisfactory solutions. Although the Children's Bureau must lay down certain rules, the responsibility for the administration of the program lies with the states which will deviate from certain policies at times but which must constantly keep in touch with the Bureau regarding changes in state plans and policies.

Many thousands of families and physicians are learning for the first time the value of the advice and assistance of public health personnel. There is every evidence that the quality of hospital care provided many maternity patients today is vastly improved because of the establishment of minimum requirements for hospitals.

BUREAU OF SANITATION

T. H. Milford, M. S. in S. E., Director

COOLING MILK AT THE FARM

Contributed by
U. D. Franklin, B. S., M. S.
Principal Sanitarian

Much has been written concerning the production of high quality milk. Yet, year after year, difficulties are encountered because of poor bacterial quality of the milk supply. Undoubtedly much of this difficulty could be eliminated if all producers would cool their milk properly and keep it cold until it reaches the plant or the ultimate consumer.

It is essential that milk be produced under such conditions that the minimum number of bacteria are present or gain entrance at the time of production. Some producers are expert at producing low count milk, whereas others are unfortunate in not being able to do this, even though they appear to be careful in all of their operations. Of course, in nearly every locality, there are a few producers that continuously produce milk with bacterial counts that run into the millions.

Low count milk is not produced without care. Very little carelessness may produce a high count milk. It must be remembered that bacteria are extremely small, so small in fact that millions can ride upon a hay seed or particle of dirt and eventually tumble into the pail or can of milk. Furthermore, it is essential that the pails, cans and all utensils coming in contact with the milk be properly cleaned and sterilized or they will become a source of contamination. It must be remembered, however, that no matter how careful the producer is in his methods *some bacteria are going to get into the milk.* Although the aim of every producer should be to keep the count to the very minimum, that is not enough; it must be kept low until the milk reaches the cooling station or the plant where it is to be processed. It is right here that proper cooling becomes important.

There are two reasons for cooling milk: first, and most important, to inhibit the growth of any microorganisms that may be present in the milk; and second, to keep the components of the milk in the best physical condition.

Of the two general methods of cooling milk on the farm (aeration and immersion in cold water), aeration is used mostly by the retail producer and that of direct immersion by the plant producer. Three factors in the direct immersion type governs the speed and uniformity of milk cooling; viz., the amount of refrigeration initially available in the form of water or ice, the initial and final temperature of the milk and of the water bath, and agitation of either the milk or water.

Bacteria are minute single-cell plants. Just as is true with corn, clover, spinach and all other members of the plant world, different varieties of bacteria grow best under different conditions. There are those that grow best at 50°F., others at 70°., still others at 80° and so on. Some multiply at temperatures as high as 140° and there are a few that can withstand the temperature of boiling water for a considerable length of time. However, no bacteria can grow at temperatures below freezing and none can multiply at extremely high temperatures.

It may be said, in general, that the kinds of bacteria most commonly found in milk grow very slowly at temperatures below 50°F., and that the lower the temperature the slower their development. Consequently, it is important in the production of high quality milk to cool it below 50°F. in order to prevent appreciable bacterial development. Some producers think cooling to 60 degrees is sufficient. To be sure, such a temperature is better than 70° but there are a good many bacteria that do mighty well at 60°F.

How cold should milk be? Certain investigators showed that the bacterial count of milk held at 50°F. with 7,000 organisms at the outset increased to 60,000 at the end of the second day; with approximately the same number of organisms at the outset, milk held at 45°F contained 12,000 bacteria at the end of the second day. However, when the holding temperature was 40°F. the initial count dropped to 4,000 at the end of the second day and at the end of the fourth day it was only 8,000. Evidently a temperature of 50°F. is not low enough to prevent some multiplication of bacteria. A temperature of 45°F. results in a little growth, but at 40°F. multiplication practically ceases. It has likewise been observed that when milk

is held for 24 hours at a temperature between 55° and 65°F. the bacterial increase is tremendous.

Milk cooled in cans to 40°F. or below will ordinarily show a temperature rise of from 15° to 20°F. during a 2-hour transportation period in summer in an open truck protected only by a tarpaulin.

Proper cooling of milk at the farm is probably the most important single factor in insuring a low count at the receiving station or milk plant. Milk is undoubtedly returned to the farm more often on account of inadequate cooling than for any other cause.

Bacterial growth in milk is related to both time and temperature. Then, quite naturally, in order to maintain the high quality product obtained through the use of clean and sterilized utensils and careful methods, it is doubly important that milk be cooled promptly and kept cold so that bacterial growth may be retarded.

Nutrition in England—Since a knowledge of the incidence, severity, cause, and distribution of malnutrition is so important for public health, we must add to the few methods we already possess of eliciting that knowledge. Such knowledge is even more important in war than in peace, and it will be particularly needed as soon as parts of occupied Europe become liberated, when rapid nutritional surveys should immediately be made to discover the epidemiology of the malnutrition so that proper and adequate relief steps can quickly be taken and secondarily so that observations of nutritional deficiency in man can be made under conditions that should never occur again. Further, the United Nations at Hot Springs were pledged to make food consumption surveys and nutritional surveys after the war. To what source will they turn for advice in that important and integrated task? We have now only a few of the necessary tools, but others are almost within our grasp.

Since our emphasis must be on health in man, rather than on isolated abstractions culled from work on lower animals, we must learn more about the earliest methods of detecting departures from health due to nutritional deficiencies. That can only be done by experiments upon man. Centuries ago work on human nutrition was done by Sanctorio, and by William Stark who twice induced scurvy experimentally in himself and died of it in 1770 at the age of 29.

That work largely failed because the time was not ripe. But such work can and should now be undertaken on an adequate scale. We in Oxford have been studying such induced deficiency in man, using medical students, theological students, conscientious objectors, and ourselves. But no group in this country or in England has fully adequate facilities for properly carrying out such important experimental work.—*Sinclair, Am. J. Pub. Health, August* 1944.

BUREAU OF VITAL STATISTICS

Ethel R. Hawley, Acting Director

PROVISIONAL MORTALITY STATISTICS

REPORTED BIRTHS, STILLBIRTHS, DEATHS FROM CERTAIN IMPORTANT CAUSES AND RATES*— ALABAMA, MAY 1944, 1943, 1942

Births, Stillbirths, and Causes of Death	Number of Deaths Registered—May 1944			Rate (Annual Basis)		
	White	Colored	Total	1944	1943	1942
Births (exclusive of stillbirths)	**	**	5044	20.2	24.0	22.5
Stillbirths	**	**	206	39.2	34.6	37.7
Deaths (exclusive of stillbirths)	1144	882	2026	8.1	8.4	8.5
Infant Deaths:						
Under one year	114	118	232	46.0	49.5	44.2
Under one month	77	53	130	25.8	30.5	29.2
Typhoid and paratyphoid 1, 2					0.8	0.4
Epidemic cerebrospinal meningitis 6	3	2	5	2.0	1.2	1.2
Scarlet fever 8						
Whooping cough 9	3	4	7	2.8	7.2	3.2
Diphtheria 10					0.4	0.8
Tuberculosis all forms 13-22	39	60	99	39.6	39.6	50.0
Malaria 28	3		3	1.2	1.6	2.8
Syphilis 30	11	13	24	9.6	12.0	14.2
Influenza 33	13	6	19	7.6	14.4	9.4
Measles 35	7	3	10	4.0	2.8	1.6
Poliomyelitis 36					0.4	0.8
Encephalitis 37						0.4
Typhus fever 39	3		3	1.2		0.4
Cancer all forms 45-55	115	47	162	64.7	65.1	58.5
Diabetes mellitus 61	13	8	21	8.4	8.4	14.6
Pellagra 69	4	2	6	2.4	3.6	3.2
Alcoholism 77	2		2	0.8		2.0
Intracranial lesions 83	107	74	181	72.3	70.7	78.9
Diseases of the heart 90-95	263	178	441	176.2	161.4	152.9
Diseases of the arteries 96-99	11	10	21	8.4	5.2	14.2
Bronchitis 106	2		2	0.8	0.8	1.2
Pneumonia all forms 107-109	52	48	100	40.0	45.9	34.6
Diarrhea and enteritis (under two) 119	11	6	17	6.8	5.6	5.3
Diarrhea and enteritis (two and over) 120	3	3	6	2.4	1.6	0.8
Appendicitis 121	10	2	12	4.8	4.8	6.5
Hernia intestinal obstruction 122	10	6	16	6.4	6.4	4.5
Cirrhosis of the liver 124	3	5	8	3.2	4.0	3.6
Nephritis all forms 130-132	88	72	160	63.9	65.5	74.8
Diseases of the puerperal state 140-150	10	7	17	32.4	33.8	31.3
Puerperal septicemia 140, 142a, 147	1	2	3	5.7	11.3	10.4
Suicide 163-164	9	2	11	4.4	6.4	8.1
Homicide 165-168	8	21	29	11.6	12.0	13.4
Accidental deaths (exclusive of motor vehicle) 169, 171-195	62	45	107	42.8	63.9	50.0
Motor vehicle 170	29	10	39	15.6	14.0	17.9
All other known causes	203	122	325	129.8	138.2	143.1
Ill defined and unknown causes 199-200	47	126	173	69.1	69.5	66.7

*Birth and death rates per 1,000 population; infant death rate per 1,000 live births; stillbirths per 1,000 total births (inclusive of stillbirths); from specific cause per 100,000 population; from puerperal causes, per 10,000 total births.

**Not available.

BOOK ABSTRACTS AND REVIEWS

New and Nonofficial Remedies, 1944. Containing Descriptions of the Articles Which Stand Accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1, 1944. Cloth. Price, postpaid, $1.50. Pp. 778. Chicago: American Medical Association, 1944.

The current volume of New and Nonofficial Remedies reflects two important and forward looking decisions of the Council, namely, to use the metric system exclusively in all its publications, and to consider for acceptance contraceptive preparations offered for use as prescribed by physicians. These decisions in turn reflect the vigorous and progressive leadership of the Council in the service of medicine.

The chapter on contraceptives is quite comprehensive; with the acceptance of more preparations, it will undoubtedly assume a large place in New and Nonofficial Remedies. The Council has thus far accepted some contraceptive jellies and creams, contraceptive diaphragms, diaphragm inserts, syringe applicators, and fitting rings. It is understood that a number of additional preparations have been submitted for Council consideration since the book went to press. This chapter represents a courageous and long-needed innovation.

Some of the new preparations that appear in this volume are succinylsulfathiazole, a new sulfonamide, a proprietary brand being "sulfasuxidine"; diodrast concentrated solution, a preparation of the already accepted diodrast, for use in a special diagnostic procedure for visualization of the circulatory system and also cholangiography; a preparation of sodium benzoate for use as a liver function test; mersalyl and theophylline, accepted under the name salyrgan-theophylline tablets, proposed as an adjunct to intravenous injection of the already accepted drug; zinc insulin crystals and zinc insulin injection crystalline; tetanus toxoid; and concentrated oleovitamin A and D, a dosage of the pharmacopeial preparation.

A glance at the preface shows that certain general articles have been revised to bring them up to date. More or less important revisions have been made of the following chapters: Barbituric Acid Derivatives, Estrogenic Substances; Parathyroid; Ovaries; Sulfonamide Compounds; Vitamins, especially the sections, Vitamin B Complex and Vitamin D. In this connection it is worth noting that each chapter in the book is reviewed annually, or more often if indicated, by the responsible referee for such revision.

This volume is of paramount interest to all those concerned with rational and modern drug therapy.

A. M. A.

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1943. Cloth. Price, postpaid, $1.00. Pp. 150. Chicago: American Medical Association, 1944.

The present volume of reprints contains only eight reports on rejected articles; it is interesting to note that objections to these are on a much higher plane than those it was necessary to urge against the flagrantly quackish preparations of earlier days.

Perhaps the most noteworthy of the nineteen general and "status" reports in this volume is the one declaring the Council's intention of using henceforth only the metric or centimeter-gram-second system in its publications. The report itself gives some interesting and readable history on the subject of weights and measures. Of most timely interest to the general physician as well as the endocrine specialist is the report on nomenclature of endocrine preparations. The report gives a currently quite complete list of the available commercial preparations, including those not accepted by the Council as well as those which stand accepted. Another report in the field of endocrinology is that recognizing the use of estrogens in the treatment of prostatic carcinoma.

Attention should be called to at least two of the reports concerned with vitamin preparations, namely, the status report giving the Council's decision that the evidence does not yet warrant the acceptance of cod liver oil preparations for external use, and the report announcing the Council's recognition of the use of massive doses of vitamin D in arthritis, and in this volume includes a current comment from The Journal of the American Medical Association titled "Hope (false) for the Victims of Arthritis," which reemphasizes this objection.

The status report on xanthine compounds gives a much needed delimitation of the therapeutic claims that may be recognized for aminophylline and its related xanthine derivatives. Of similar interest is the report on the local use of sulfonamides in dermatology, and in the same category may be mentioned the report on agents for the treatment of Trichomonas Vaginitis, which points out that the present aim should not be for new medicaments in this field but for further information, especially concerning failures with those that have been used. In another status report the Council sets forth its conclusion that present evidence does not justify claims for advantage of oral use of sodium sulfonamides over the free drug.

In line with its decision to consider for acceptance various contraceptive preparations, the Council published a status report on conception control, which is concluded in this volume. The report comprises a series of concise statements on the various preparations and methods of control, prepared by Dr. Robert Latou Dickinson, together with a statement of criteria by which the Council will consider the acceptability of contraceptive jellies, creams, and syringe applicators and nozzles, diaphragms and caps.

It cannot be too often said that this volume, as well as the other publications of the Council,

remains of paramount interest to all who are concerned with rational use of therapeutic agents.

A. M. A.

Industrial Ophthalmology. By Hedwig S. Kuhn, M. D., Hammond, Ind. Cloth. Price, $6.50. Pp. 294, with 114 illustrations including 2 color plates. St. Louis: C. V. Mosby Company, 1944.

This volume is a timely work which focuses attention on a field that today demands that attention more than ever from the medical profession in industrial regions. As industrial requirements become more and more specialized, so is the visual field tending to become more emphasized in meeting these requirements. This work states this subject very adequately. It serves to emphasize the demands modern industry makes on vision. Dr. Hedwig S. Kuhn is especially qualified to write on this subject, having lived and practiced ophthalmology in a densely industrialized region for many years. In addition, it becomes apparent that her interest in this work is very genuine when the thoroughness in which the subject has been treated is considered.

The rationale of a thorough eye program for industry is presented, selecting adequate preemployment tests, providing for periodic rechecks of special groups, and conducting a practical visual survey of industrial plants which is dealt with in an endeavor to ascertain what facts about the eyes are important, when and how those facts are to be interpreted, how they can best be used in rehabilitation, how they can be used to step up production, and how this information might be utilized to reduce accidents. A comprehensive program embodying these principles is set forth more or less specifically rather than dealing in generalities. The subject of toxic hazards in industry is discussed, and also an adequate eye protection program. There is a chapter written by Dr. Albert C. Snell devoted to facts relative to eye injuries.

The whole volume is generously illustrated. There is information of value in this book not only to ophthalmologists but also to others of the medical profession and to those in industry who are interested in this field.

Daniel S. Hagood, M. D.

Sexual Anomalies. The Origins, Nature and Treatment of Sexual Disorders. By Magnus Hirshfeld, M. D., Late President of the World League for Social Reform, and Director of the Institute for Social Reform, Berlin. Cloth. Price, $4.95. Pp. 630. New York: Emerson Books, Inc., 1944.

Out of this war there have emerged a good many medical texts written by refugee doctors. Most of these books have been poorly planned and hurriedly written but this text on the sexual perversions strikes a different note. It is an intensely interesting book assembled from the notes and case histories of Hirshfeld by his former pupils. Hirshfeld died a broken man in France after fleeing from the Nazi regime in Berlin where he had been a prominent authority on sexual perversions. This text follows the general pattern of a book of this type, which means that it is full of lively case histories. As usual these case histories are all dated from twenty to two hundred years back and this makes one wonder their authenticity. However, fact is often stranger than fiction and each case history proves the point, for in them we are shown both the comedy and the tragedy that befalls those humans whose sexual interests go off on the wrong tangent. The humor and comedy of the true fetishist can be contrasted with the horrifying disgust and tragedy of the necrophile, sadist or masochist. This book is based on the fact that every sexual perversion has its pendant in normal life, for in a purely quantitative sense a perversion is only an exaggeration of tendencies inherent in the normal person. Every normal person when aroused in erotic intercourse derives a certain amount of pleasure in being a little sadistic or masochistic. It is only when sadistic or masochistic practice achieves the means to an end that perversion is established. Many minor acts of perversion are practiced by people with normal sexual outlet at times just for the variety it supplies and at times it is done to keep the same act from becoming routinely monotonous. Because many acts of perversion are committed while the patient is in a daze or stupor we are left with the thought that this is an epileptic aura or actual petit mal attack.

The book is divided into 5 large headings which include normal sexual development, irregular development, deflections of the sexual impulse, sadism and masochism, and other partial impulses such as fetishism and exhibitionism. The book is printed on war time paper with big print, is loosely bound and is offered at a reasonable price. There are no references other than the monotonous continual references to Kraft-Ebbing and Forel and Wulfeen. There is no bibliography at the chapter endings. There is no mention of treatment of any type.

P. K. Burwell, M. D.

Virus Diseases in Man, Animal and Plant. A Survey and Reports Covering the Major Research Work Done During the Last Decade. By Gustav Seiffert. Cloth. Price, $5.00. Pp. 332. New York: The Philosophical Library, 1944.

The original edition of this book was published in Germany in 1938. The English edition includes additional references from the more recent literature. It is intended as an introduction to the study of virus diseases.

The subject matter is divided into five major sections. The first section deals with the general character of viruses and includes chapters on elementary bodies, cell inclusions and methods of measurement, filtration, concentration, purification and cultivation of virus agents. Natural and acquired immunity and protective inoculation are also discussed. The second and largest section is devoted to short summaries of the literature on specific diseases of man, animals and plants which are known or thought to be due to viruses. The third and fourth sections deal with virus-like agents such as pleuropneumonia organisms, rickettsia, bartonella, bacteriophage and filterable bacteria. In the final section the author describes technical procedures such as special staining methods and immuniologic reactions.

This book is not recommended for exact information about specific virus diseases.

Harald N. Johnson, M. D.

WAR PRODUCTION BOARD NEWS

HOSPITAL WASTE PAPER AND CONTAINER RE-USE PROGRAM

America's hospitals have a bigger than average stake in the current waste paper salvage program. If civilian hospitals are to continue to receive their full quota of paper-packaged supplies, and at the same time lend a hand to the military hospital units abroad, it is essential they dig out now every ounce of available waste paper and dispose of it.

Paper has gone to war by the hundreds of thousands of tons, with no small part of it represented in the form of containers for foods, blood plasma, medicines and supplies for hospitals. Demand for paper is reaching unheard of tonnages after two years of war. American inventive genius has produced bomb bands of paper, shell cases of paper, and ammunition chests, practice bombs, and camouflage material, all manufactured from paper.

It takes 25 tons of blue print paper to build one big battleship. More than 700,000 different kinds of items are shipped to the Army, paper-wrapped or boxed. Each 500 pound bomb requires 12 pounds of paper in the form of rings (bands), tops and bottoms. Each 75 mm. shell takes 1.8 pounds of paperboard for its protective container.

It takes 52 pounds of paper to protect an Army hospital ambulance for overseas shipment.

These vital needs for paper must be satisfied, which means that the nation's civilian hospitals must do more than their part.

With such heavy demand on paper of all kinds, shortages have appeared, grown progressively worse and are now at a critical stage with war production and civilian supplies threatened by paper mill closings.

The chief substitute for the scarce wood pulp today is waste paper. Not only can waste paper stretch diminishing supplies of wood pulp—it can be used directly in the manufacture of many important war products, thereby saving proportionate amounts of wood pulp for other uses.

The paper shortage is very real. Unless adequate supplies of waste paper can be moved to the mills, the curtailed paper and paperboard production will seriously retard the war program and will have even more serious effects upon civilian uses of paper. Hospitals, doctors' offices, and other medical and dental centers that depend on packaging to safeguard supplies have a direct stake in salvaging waste paper as insurance that there will be adequate raw materials for continued production of paperboard. They have an even greater obligation to see that military and naval hospitals are given full supplies of paper through assistance in the waste paper salvage program.

The active help of every hospital in the program should consist of:

(1) Avoiding waste in the use of paper.

(2) Salvaging waste paper and returning it to use.

Today, the War Production Board regional offices throughout the country are asking for the cooperation of every hospital, every doctor, every medical and dental unit in the scrap paper program. They are asked to dispose of books, magazines, newspapers, records, wrappings, cartons, advertising literature and bulletins. They are asked to ferret out every last scrap or shred of paper to go into the salvage paper drive.

In the Chicago area, literally tons of old hospital records are being thrown into the scrap pile. Old medical records of a confidential nature are being gathered together, bound up, and delivered to the shredding machine.

At St. Luke's in Chicago, Leo Lyons, director, is today supervising the huge task of micro-filming all the hospital's records for the last 40 years and tossing the original records into the scrap heap. Micro-films will form a more permanent and safer record, and at the same time sufficient floor space is being conserved to take care of developing new employee locker rooms and additional bed space.

Waste paper from St. Luke's is averaging 6,000 pounds of salvage each month. In addition, the accumulated records of 40 years, which are being micro-filmed, will total many tons of paper, one-half of which is in medical records, and the balance in financial records. The records were stored in six

rooms. Thus, six full-size hospital rooms will be made available.

Cook County Hospital and Evanston Hospital, the latter in a Chicago suburb, are also micro-filming their records, and both Wesley Hospital and Children's Memorial Hospital are preparing to do the same within the next few weeks. Others have also indicated their willingness to take the same step.

While micro-film machines are not available for purchase at this time, they can be rented from local sources, the names of which are available from your local War Production Board office.

But micro-filming of old records is only one step that can be taken to swell the nation's paper scrap piles. Each hospital head should check the following sources of waste paper: old files, ledgers, correspondence, receipts, canceled checks, time cards, invoices, pamphlets, calendars, bulletins, obsolete catalogs, books and periodicals, containers, flower boxes and waste baskets.

Used paperboard containers are particularly in demand and the large number that come into hospitals regularly should be carefully conserved and turned back for reuse. Corrugated and solid fibre containers, and set-up boxes should be carefully collapsed, tied into bundles and turned over to a scrap or container dealer. More than a billion containers will be required in 1944 for the armed forces and lend-lease. While the armed forces in this country return containers for reuse, those overseas cannot. But every hospital can put its used containers back into circulation. In this lies the solution to the critical shortage of home-front containers, the only way to keep medical and hospital supplies moving, a way every hospital can help the war effort and itself.

Hospitals handle paper and other salvage in one of two methods: (1) contract with a salvage dealer to collect, handle and dispose of all the hospital's salvage at regular intervals; or (2) the hospital itself collects the salvage, bales, bundles or shreds it and disposes of it direct to a dealer or mill. Both paper balers and shredders can be obtained today and hospitals seeking to purchase them should consult the local War Production Board officials.

Whatever method is in use today in the average hospital, there are four immediate and additional steps that should be taken to accelerate at once the waste paper collection.

(1) Appoint and hold responsible some member of the hospital personnel to head and correlate the paper salvage program.

(2) Take immediate steps to scrap old records by using the micro-film process.

(3) Publicize the waste paper drive with bulletins or posters in every department, with short talks and appeals to staff personnel.

(4) Set up a system of waste paper collection with every possible source of waste paper checked at regular intervals.

There is an immediate and firm market for all grades of waste paper, and its disposition is a source of actual dollar profit to the hospital and, in many cases, makes available more floor and storage space, improves the appearance of all departments and lessens the fire hazard. In this connection, no waste paper should be burned until it is ascertained that it is not recoverable for war use. In cases where there is a question as to the disposition of confidential papers and records, consult the WPB office for information as to how this material may be recovered.

Hospitals can be especially helpful in the waste paper drive by publicizing the campaign to all doctors whose offices are fruitful and profitable sources of old magazines, newspapers, bulletins and records. It has been suggested that hospitals urge doctors to send or bring their waste paper to the particular hospital which they serve as one means of aiding them to dispose of it with a minimum of effort. Desks, both in doctors' offices and in hospitals, are generally good sources of scrap and should not be overlooked. One hospital supply firm recently urged all employees to "houseclean" desks and the result was an agreeable surprise.

One enterprising hospital salvage official recently prepared a poster display for the hospital reception room showing actual army medical kits and blood plasma cartons (which are made from paper) and the corresponding amount of waste paper needed for their manufacture. The poster stated:

100 pounds of paper will make
—200 containers for blood plasma, or
—1.470 cartons for emergency lifeboat rations, or
—17 protective bands for 500 pound bombs, or

—650 cartons for field "K" ration, or
—1,100 cartons each containing 15 fifty calibre incendiary bullets, or
—200 cartons containing one life preserver light, or
—300 containers each containing one tube of poison gas ointment, or
—100 cartons each containing 10 dozen fever vaccine.

Waste paper, which in peacetime was so plentiful that it became a nuisance in the hospital, today is a vital war material necessary in the manufacture of almost every piece of essential military equipment. The demand is so great that normal trade channels are unable to supply enough waste paper to keep mills running full time and to enable them to meet all overseas and home-front war requirements. At the present time there are approximately 25 paper mills shut down for lack of waste paper and inventories are dangerously low in many others. The situation is critical.

There is an abundance of waste paper in the home, the office and the hospitals, much of which never reaches the mill. Wartime shortages of manpower and transportation are so acute that the flow of waste paper to the mills has been curtailed. And therein lies the problem.

Shipments of waste paper to the mills must be increased at least 167,000 tons (33 1/3 per cent) a month. WPB estimates that more than 1,250,000 tons of salvagable paper are available every month, and half of this will keep the mills running at peak production. The hospitals of America are in a strategic position to aid in boosting this tonnage.

The many thousands of tons of urgently needed waste paper gathering dust and costing storage space in hospitals throughout the country will appreciably swell the total scrap tonnage collected in the coming months.

Here are some final pointers which every hospital director, or hospital salvage manager, may follow in his own scrap drive:

(1) All grades and types of paper are wanted—don't slight any source.

2. Waste paper brings varying prices depending on type, grade and condition, locality and transportation cost. Your dealer can tell you how to sort paper to bring premium prices.

(3) Corrugated containers should not be sold with mixed paper. They should be separated and bundled for collection.

(4) Baled paper brings highest prices, so if your hospital does not have a baler, ask your dealer about bringing in baling equipment.

(5) Shredding is a safeguard for confidential medical files. Papers can be sent to a dealer to be shredded, with a hospital official accompanying the shipment in order to guarantee complete security.

(6) Waste paper should be disposed of through regularly established waste paper dealers. If one is not available, call your WPB office for advice.

No part of the war effort is more essential than the waste paper drive. The hospitals of America must shoulder their share of this job today.

AMERICAN MEDICAL ASSOCIATION NEWS

SULFONAMIDES ARE OF NO VALUE IN TREATMENT OF POLIOMYELITIS

CLEVELAND DOCTOR, IN LETTER TO THE JOURNAL, SAYS DOCTORS SHOULD BE WARNED AGAINST THEIR USE FOR INFANTILE PARALYSIS

The sulfonamide drugs are of no value in the treatment of infantile paralysis and physicians should be warned against their use for this disease, John A. Toomey, M. D., Cleveland, declares in a letter published in The Journal of the American Medical Association for September 2. Dr. Toomey says:

"I feel that physicians should be warned against the use of sulfonamide drugs in the treatment of poliomyelitis.

"It has been noticed clinically that when paralyses of the intestine and urinary bladder persist there are apt to be extensions of the . . . paralyses. When urinary retention was produced in animals (monkeys) by the use of sulfonamide compounds, drugs which produced ureliths and blockage of the ureters, a more massive disease was produced two or three days sooner than that which

appeared in controls simultaneously injected with poliomyelitis virus.

"Rosenow had the same experience with sulfapyridine at the Mayo Clinic and reported that this drug produced an additive neurotoxic effect.

"Recently an explosive epidemic of poliomyelitis occurred in a small town of northern Ohio. The number of patients that developed severe paralysis seemed out of proportion to the normal expectancy. Most of these patients had received sulfonamide drugs (information received from Mrs. Louise Bowers, health officer, Perrysburg, Ohio).

"Recently a 12 year old girl had signs of meningeal irritation but no sign of any muscle involvement save in one leaf of the soft palate. The reflexes were hyperactive; the child was not acutely ill. . . . . The prognosis seemed good whether the condition was poliomyelitis or meningitis. Sulfadiazine was started. Twelve hours later and after 12 Gm. of sulfadiazine had been given, a massive extension of paralysis suddenly developed, the throat muscles and intercostals all becoming affected within an hour. This sudden explosive extension in an otherwise nearly normal patient had not been our previous experience in this type of case.

"The sulfonamide drugs are of no value in poliomyelitis. Nor does penicillin help much in our experience, although we have not noticed that it does harm."

YOU SHOULD ASK "WHAT DOCTORS ENDORSE?"

When the radio voice claims approval by "doctors" for some product related to health, Austin E. Smith, M. D., Chicago, advises in the September issue of Hygeia, The Health Magazine, the listener should ask: "What doctors?"

Dr. Smith, who is secretary of the Council on Pharmacy and Chemistry of the American Medical Association, says that "For almost half a century, the offices of the American Medical Association and other bodies with humanitarian interests have worked consistently and earnestly to expose objectionable preparations widely sold to the public.

"In the past, secrecy about their contents has been one of the most effective means whereby manufacturers could exploit these remedies, more for the satisfaction of their own purses than for the good of the public. Now that the Food and Drug Administration requires the declaration of active ingredients on the labels, however, the promoters of the more objectionable nostrums must use clearly worded advertising to compensate for the loss of secrecy. Over the radio, in newspapers, in magazines and by direct mail pieces the public is constantly urged to use this brand of vitamins, that brand of soap, some other brand of liniment, cough mixtures, laxatives, cosmetics and countless other articles.

"One of the most popular means of promoting a preparation is to offer advertising that refers to 'authoritative medical opinions' or 'a group of famous doctors.' 'Recommended by doctors' and 'doctors say . . .' are familiar phrases today. Seldom is the public provided with details concerning the 'doctors' who 'advise' such preparations, but by dint of constant reminders the radio listener and newspaper reader are lulled into complacence which makes them overlook the absence of this useful information.

"On seeing such statements the reader should ask himself immediately how many doctors actually advise this vitamin or that cough mixture, where the investigations were conducted and what scientific standing these 'doctors' may have. If the average person would stop to contemplate the number of manufacturers that frequently make the same or similar claims, he would realize at once that it is impossible for all the advertised devices and articles to be found as acceptable as the promoters would have him believe. . . .

"One way of distinguishing between reliable statements and nonsensical advertising puffery is to look for some sign of actual consideration by a scientific group, an indication of this being the appearance on the package or in advertising matter of a 'seal' such as those of the Councils of the American Medical Association and the American Dental Association. . . ."

SURVEY SHOWS GREAT VARIATION IN COST OF VARIOUS VITAMIN MIXTURES

A survey of multiple vitamin products on sale in one of the largest department stores in the country, made by the Council on

Pharmacy and Chemistry of the American Medical Association and reported in the September 2 issue of The Journal of the Association, reveals, The Journal points out, that there is almost as great a variation in the individual selling price of vitamin mixtures as in the claims made for them. This survey helps explain why many hundred million dollars are spent needlessly on them.

Included in the Council's report is a tabulation of 25 brands of vitamin mixtures on sale in the store surveyed, listing the selling costs and declared contents of each brand. The table reveals differences ranging from a few cents to several dollars between the costs of certain brands containing almost the identical amounts of the different vitamins.

Discussing the Council's report, The Journal says that it "should help explain the $179,000,000 spent for vitamins in 1943. Those who are familiar with the true indications for vitamin therapy already realize how many hundred dollars are spent needlessly; others have only to glance at the Council's report. As the report reveals, the individual costs of vitamin mixtures vary greatly, almost as much as the promoted claims. No group of agents is now subjected to greater advertising abuse than vitamins. The radio, newspapers, store counters and other mediums constantly attract the ear and eye with pleas to improve the health, correct constipation, avoid dizzy spells and be successful with love and business affairs. How? Simply by taking vitamins according to the promoters! Fortunately there are bodies such as the Council on Pharmacy and Chemistry to set forth in succinct fashion the basic claims that may be made for vitamins. Such publications of the Council as New and Nonofficial Remedies present the scientifically recognized actions and uses of vitamins. This information should be spread widely."

The Council says in its report that "The multiplicity of mixed vitamin preparations that are now available in commerce has created much confusion. According to the promotion claims, each preparation is supposed to be better than all others. Sometimes the claims are based on some unique manufacturing technic, sometimes on the addition of minerals and often on the addition of vitamins other than those for which minimum daily requirements have been set. For recognized claims relating to vitamin therapy the physician should consult New and Nonofficial Remedies.

"During June 1944 a survey was made of multiple vitamin products offered in one of the largest department stores in the United States. The selling costs and declared contents are tabulated herewith. . . .

"None of the . . . preparations (listed) stand accepted by the Council for inclusion in New and Nonofficial Remedies. Further, the advertising claims offered on behalf of some of the mixtures preclude any possibility of their acceptance. The accompanying table is offered solely to emphasize the importance of examining the labels and of using standard reference sources such as New and Nonofficial Remedies to ascertain recognized actions and uses and to compare these with the profuse and deceptive statements prepared by the more ebullient promoters."

Also included in the report is a table showing the daily vitamin requirements recommended by the National Research Council, and the Food and Drug Administration's recognized minimum daily requirements.

In one third of the brands listed in the report the declared amount of one or more of the vitamins was less than the recognized daily requirements. In one instance the amount of five of the six vitamins in the declared content was two to three times the daily requirement, with a corresponding higher cost.

REPORT SUCCESSFUL TREATMENT OF A TYPE OF SINUS INFECTION

PENICILLIN BRINGS RECOVERY OF PATIENT WITH CAVERNOUS SINUS THROMBOPHLEBITIS WHICH UNTIL RECENTLY WAS UNIVERSALLY FATAL

The successful treatment of a type of sinus infection which until a few years ago was universally fatal is reported in The Journal of the American Medical Association for September 2 by W. M. Nicholson, M. D., and W. B. Anderson, M. D., Durham, S. C.

Cavernous sinus thrombophlebitis is a condition in which there is an infection, at the site of a thrombus or blood clot, of the wall of a vein in the cavernous sinus, a cavity containing blood, which is located at the base of the brain in back of the eye. It generally is secondary to some other infection such as a boil or infected hair follicle. Until 1937 only seven recoveries had been reported.

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Manufactured and packaged in a most sanitary manner.

Mixes in water without difficulty and stays well in suspension.

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May be prepared a day or more in advance of use without danger of souring.

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GASTROPAQUE, Flavored or Unflavored, in 100 pound drums will be found most economical for the Laboratory or Institution where a large number of patients are examined. If stored in a clean dry place, an opened drum of GASTROPAQUE will keep in perfect condition for an indefinite period of time.

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NERVOUS patients are accepted by us for observation and diagnosis as well as treatment.

E. W. STOKES, Medical Director, Established 1904.

Telephone—Highland 2101

Miscellany

FIND THAT PENICILLIN PERMITS EARLY SKIN GRAFTING ON BURNS

INVESTIGATORS SAY RESULTS IN 17 PATIENTS INDICATE USE OF DRUG SOLVES PROBLEM OF LOSS OF GRAFTS FROM INFECTION

Penicillin appears to be the solution to one of the chief problems involved in early skin grafting of burned areas, John Winslow Hirshfeld, M. D.; Matthew A. Pilling, M. D.; Charles Wesley Buggs, Ph.D., and William E. Abbott, M. D., Detroit, report in The Journal of the American Medical Association for August 12. They report that from their experience with 17 patients to whom penicillin was administered at the time of skin grafting they believe that the use of the drug permits early grafting and also appears to prevent the loss of skin from infection that ordinarily occurs in about one third of the cases in which split thickness grafts are placed on contaminated recipient sites. Nineteen split thickness grafts were performed on the 17 patients. With one exception, from 90 to 100 per cent of the transplanted skin took in every instance, the exception occurring in an uncooperative alcoholic addict on whom 80 per cent of the grafts took.

"Before penicillin was available," they say, "we performed over a hundred grafts in patients with third degree burns. Although many excellent takes were obtained, in about one third of the cases 25 per cent or more of the graft was lost because of the occurrence of infection. Therefore the consistency with which excellent takes were obtained in this series of 19 grafts has been very impressive to us. . . ."

The authors point out that "Few patients are more miserable than those with large unhealed third degree burns. Early skin grafting of the burned areas is the only means of quickly returning these patients to a useful life. The longer this procedure is delayed, the greater the immediate threat of death and the ultimate development of scars and deformity. The aim of all treatment, therefore, is reepithelization of the burned areas as promptly as possible. In general, it requires from one to three months to achieve this aim. . . ."

They say that the necessity of grafting the same area more than once is the chief factor tending to prolong the convalescence of such patients and that infection is the chief cause of failure of skin grafts to take.

All of the 17 patients received penicillin by injection into the muscles, the dose and the duration of treatment varying somewhat from patient to patient. In general, penicillin treatment was started about twelve hours before operation and was continued until the time of the first dressing.

"The administration of penicillin," they say, "did not seem to alter the bacterial flora a great deal; cultures taken at the time of the first dressing from the margins of the grafts and from the sutures usually yielded the same organisms that were present on the granulating surface before grafting. In spite of their persistence, they did not seem to affect the growth of the graft. Penicillin, therefore, must hold them in check until the skin has a chance to become established in its new bed."

THE DECLINE OF TUBERCULOSIS

It is often said that the death rate from tuberculosis is a delicate index of social progress. If this is so, one of the most striking features in the history of public health is the steady decline of both pulmonary and non-pulmonary tuberculosis during the past two generations. There are many factors responsible for this decline, including a higher standard of living, better housing and better education, but these are only contributory. It must never be forgotten that tuberculosis is first and last an infectious disease. Anything that increases the risk of infection will cause a rise in the incidence of the disease, and anything that diminishes that risk will result in a rapid improvement in the figures. James Mackintosh, M. D., New Jersey Pub. Health News, Dec., 1943.

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BACKGROUND

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BOSTON
DEC 13 1944

"MY DOCTOR'S MADE A NEW MAN OUTTA BOTH OF US!"

"ALL that endless figuring and re-figuring of milk, carbohydrates, water for feeding formulas was getting my doctor down. 'Specially with all he has to do these days.

"No wonder he looked into S-M-A. An' no wonder he made all his babies S-M-A babies—right off! It sure fixed him up with extra time for his extra work—and even a bit for some sleep. Why, it takes only two minutes to explain to a mother or nurse how to mix and feed S-M-A*.

"Better yet, my doctor knows that in S-M-A he's prescribing an infant food that closely resembles breast milk in digestibility and nutritional completeness!

"Happy am I—and so is Mummy! 'Cause S-M-A made a new man outta me. I'm gaining by leaps and bounds. And Doctor? His new disposition matches *mine*. Believe you me, EVERYBODY'S happy if it's an S-M-A baby!" A nutritional product of the S. M. A. Corporation, Division WYETH Incorporated.

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"Everybody's Happy

. . . IF IT'S AN SMA BABY!"

REG. U. S. PAT. OFF.

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of

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CHRONIC BRONCHITIS IN THE AGED

JAMES F. ALISON, M. D., F. A. C. P.
Selma, Alabama

In the last decades of life bronchial ailments present a difficult and distressing problem to patients and physicians. The condition is frequent, ranging from smokers' cough, a dry hacking cough, to the productive cough of bronchiectasis. The management of these patients resolves itself into the control of the cough, lessening of disability, and the securing of comfort. Cure is probably unattainable, although much can be done to overcome the disability and distress of these patients.

The prelude of any course of treatment is a thorough evaluation of the patient's physical shortcomings. An x-ray study of the chest is most important. For diagnosis, instillation of lipiodol is valuable. However, in using lipiodol always be certain that the patient is not allergic to the iodine or oil in which it is contained. By doing this some unpleasant reactions can be avoided. The possibility of iodism is lessened when a laxative is given immediately after the lipiodol instillation. The iodine is poorly absorbed in the bronchial tree but very quickly absorbed in the stomach. In selected cases, the bronchitis of asthmatic type, without frank bronchiectasis, is benefited by repeated instillations of lipiodol. In 1933 and again in 1938 I reported small series of patients thus treated. In patients with extensive bronchiectasis there is improvement after lipiodol, but repeated instillations will be detrimental, as the lipiodol pools in the cavities and will set up local inflammatory changes.

After the diagnosis is established and the patient's physical condition, environment and needs have been evaluated, he should be advised concerning habits, activity and the avoidance of exciting causes, such as lint, dust and mineral particles. The existing cause may be found in the patient's occupation. Paranasal and oral infection should be eliminated as far as possible, remembering that elderly patients are not good risks and that extensive procedures will probably not effect a cure.

Care must be directed toward preventing the lung bases from becoming plugged with sputum and functionally impaired. Postural drainage, with a glass of hot water or a cup of hot coffee before breakfast, will serve to bring up the sputum, and may clear the bronchial tubes for the day. Potassium iodide in small doses over long periods of time helps to decrease the viscosity of the sputum and to facilitate expulsion. The expectorant cough mixtures, such as tincture of ipecac 10 gr., ammonium chloride 2 gr., and ammonium carbonate 5 gr. to the dose are helpful. At times it is necessary to give codeine to secure rest from the continual coughing. I have found that these patients do better when they are taking some sedative, such as bromides or phenobarbital over long periods of time. I do not think they are harmful in the usual dosage; and rest, sleep and freedom from nervousness helps these patients a great deal.

I have found the sulfa drugs helpful, especially with those patients who have bronchiectasis. The dose is smaller than in the acute infections but continued over a longer period. One and a half grams of sulfamerazine a day for seven to ten days, then a rest period of a week and repeat the drug, has

Read before the Association in annual session, Montgomery, April 18, 1944.

proven of benefit. Recently Barach *et al.* have advocated the inhalation of nebulized sodium sulfathiazole in the treatment of bronchopulmonary disorders, including bronchitis and bronchiectasis.

The technic of the inhalation treatment offers some difficulties. Barach uses an epinephrine vaporizer connected with an oxygen tank to supply the power. The patient holds the nebulizer between the teeth and breathes with the mouth open. The length of the treatment is from fifteen to twenty minutes and therapy is continued over a period of weeks. In the absence of this equipment I have tried the regular hand vaporizer with moderate success, as the patients usually are not very faithful in persisting in the treatment. Its application is therefore limited.

In the same article Barach quotes Latraverse who uses two to five cc. of 5% sodium sulfathiazole instilled in the bronchial tree several times a week. The instillation is accomplished by the same method used with lipiodol. He reports that by persistent treatment patients with disabling bronchiectasis are restored to useful lives. There were no local or systemic reactions noted in either the inhalation or instillation of sodium sulfathiazole.

During the winter months the elderly patients with bronchitis suffer most and the dangers of pneumonia are imminent. Bronchial spasm is likely to occur and be distressing. When fever and bronchial spasm develop, intensive chemotherapy and antispasmodics are indicated early, and treatment should be vigorous.

In summarizing I should like to emphasize these points:

1. A careful physical examination, with an x-ray of the chest, should be made.

2. Knowledge should be had of the patient's habits, environs and necessary activity.

3. Advice as to exciting causes, amount of work and rest needed, and establishment of a rational routine of living should be given.

4. Medical agents: The sulfonamides are probably the most useful. Potassium iodide and the ammonium salts are time honored. Lipiodol is valuable in selected cases. In the group of patients who suffer with bronchial spasm, the ephredine compounds and epinephrine are useful and comforting. Phenobarbital and bromides have a definite place in the treatment, and codeine sometimes is valuable in securing rest.

A PRELIMINARY REPORT OF BLOOD TESTING, AS REQUIRED BY ALABAMA LAW, IN THE FIRST THREE COUNTIES SURVEYED

W. H. Y. SMITH, M. D., C. P. H.
Director, Division of Venereal Disease Control
D. G. GILL, M. D., D. P. H.
Director, Bureau of Preventable Diseases
And
S. R. DAMON, Ph. D.
Director of Laboratories
STATE DEPARTMENT OF HEALTH
Montgomery, Alabama

In July 1943 the Legislature of Alabama passed a unique law requiring all civilians between the ages of 14 and 50 residing or living in the State of Alabama to have their blood examined for syphilis. The statute resulted from the realization of the magnitude of the venereal disease problem and the difficulty of control unless all infected individuals could be brought under treatment. In passing this law, Alabama became the first state in the Union requiring its residents to be blood tested for syphilis. The provisions of the statute set forth that the testing be done "by a county basis" and that the sequence of counties be determined by the State Board of Health. The law also stipulates that all members of a family under 14 and over 50, living in the same household in which a positive reaction has been found, shall be blood tested.

In selecting the first few counties, consideration was given to the number of venereal disease clinics in operation and the readiness of the local medical profession to cooperate. It was felt the blood testing program would be a failure unless the individuals who were proven to be infected could be brought under treatment within a reasonable period after the survey. The procedure within a given county was first of all to determine the number of blood-test stations necessary to cover the county in such a way that no person would have to travel more than two miles to reach a station. Using OPA registration figures, census figures and after consulting local citizens as to the number of people living in a prescribed area, an estimate was made as to the expected number of people between the ages of 14 and 50 that would attend each station. The basis for timing the stations was to allow forty people per hour for each person drawing blood.

After arranging for blood-test stations, an intensive educational program was put on for about four weeks. Syphilis, as a subject, was stressed, although there were references to the other venereal diseases. Where radio stations were available, this means of publicity was utilized. Addresses were made to all service clubs, women's clubs and all other groups that met in the county. Educational newspaper articles were carried in the newspapers, and the week before blood testing was to begin the complete list of stations, with the day, time and place of operation, was printed in the local newspaper. Handbills signed by local officials calling on the people to obey the law and showing the complete list of the stations were distributed. Posters, announcing the time and location of the stations, quoting the law, and giving venereal disease information, were displayed throughout the county. Motion pictures were shown in schools, churches and even in the open where buildings were not available. A portable electric generator made it possible to show pictures in any part of the county. Venereal disease pictures were shown in the local theatres. In each county, following the educational and preparatory work, a period of two weeks was allowed for the actual collection of specimens.

At each station there was one individual (either a physician or a nurse) to collect blood, and four clerks. Each team carried out each day, from the health department, all the equipment necessary to complete the day's work. All needles and a few syringes were sterilized the day before and packed in covered sterile catheter trays. Alcohol, cotton, tourniquets, wash pans, numbered cards, laboratory forms and sterile test tubes completed the equipment carried by the teams. One car was used by each team to transport the workers from station to station.

Each person presenting himself at a blood-test station was given a prenumbered certificate card stating he had complied with the law (Fig. I). This card was filled in by the first clerk and passed to the second clerk; she in turn transferred the information to the laboratory form (Fig. II). The blood test certificate number was written by the clerk on this laboratory slip. The cer-

ALABAMA STATE BOARD OF HEALTH
No. 10418

Date

(Name) Last First Middle

☐W ☐C ☐M ☐F
Color Sex age ht wt date of birth

Exact post office address whose signature
is in the lower left hand corner of this card has submitted blood for a blood test as required by ACT 529, General Acts of Alabama, 1943.

B. F. AUSTIN, M. D.
State Health Officer

Signature of Holder Form 1

FIGURE 1. BLOOD TEST CERTIFICATE CARD

ALABAMA STATE BOARD OF HEALTH

Date

Serial No. County, Ala.

Name of person

Last First Middle

Exact post office address

Date of birth ☐ White ☐ Col. ☐ M ☐ F

Month Day Year

Signed examining physician

LABORATORY REPORT OF SEROLOGIC BLOOD TEST

Laboratory No. Date of Report

Laboratory: ☐ Birmingham ☐ Montgomery ☐ Mobile ☐ Selma ☐ Anniston ☐ Tuscaloosa ☐ Huntsville ☐ Dothan ☐ Decatur

Kahn Standard Reaction: ☐ Positive ☐ Negative ☐ Doubtful ☐ Unsatisfactory

S. R. DAMON,
Director of Laboratories

Form 11—C.T.U. Copy

FIGURE II. SEROLOGIC LABORATORY FORM

tificate card and laboratory slips were passed to the third clerk who then placed the number on the test tube. This tube was given to the individual to be carried to the physician or nurse. After the tube was filled with blood, the individual returned to the third clerk who checked the number on the tube to see that it corresponded with that of the certificate and laboratory slips. The person was then asked to sign his certificate and to keep it on his person. The fourth clerk was responsible for cleaning and caring for needles and syringes.

The type of needles used for blood taking was 21-gauge needles with a flange so that it could be attached to the test tube. Blood flowed by gravity when the tourniquet was left tied. The syringe and needle technic for drawing blood was used only when veins were so small that a 25 or 26-gauge needle had to be used. Each evening when the team returned to the health department all needles were checked, washed, sterilized and packed for use again.

At the close of the day's operation, all bloods were brought into the health center, packed and expressed by bus or train to the central laboratory.

During the two weeks period when blood was actually being taken the most that the laboratory could do was to separate the serum from the clot, freeze and store it. After the survey, examination of the sera began.

A modified one-tube Kahn test, using Standard Kahn Test Antigen, was applied to all original specimens. The results of this examination were recorded as found: that is, either positive, doubtful or negative. In all instances in which a positive or doubtful report was made on an original specimen, a second blood was obtained and examined by the three-tube Kahn Standard technic. The results of these tests were recorded also as positive, doubtful or negative. These completed forms were sent to the Central Tabulating Unit for tabulation and alphabetical listing.

As lists were completed they were sent to follow-up nurses. The lists were checked against all venereal disease clinic rosters. All clinic patients found on the lists were given a new number, the number of their blood test certificate. Then these lists were checked against OPA book number three records, by special permission from OPA officials. The list compiled from OPA records, of individuals between the ages of 14 and 50 who had not complied with the law, was checked by many local individuals in the county, such as postmasters, principals of schools, teachers and superintendents of education, in order to determine whether these persons still resided in the county. After this a first letter enclosing a copy of the blood test law was mailed to each person who had not complied with the law. For those who did not respond a somewhat firmer letter was mailed. For those who did not respond to the second letter, a third letter was mailed to their employers asking for their cooperation. The sheriff was given the names of those who did not respond to the third letter.

All persons with positive, doubtful and unsatisfactory tests were notified by letter to appear at a specific clinic or the health department. All persons with suspected syphilis, as shown by two positive or three doubtfuls or a combination after more than three tests, were requested to present themselves to their own physician or to a clinic. An examination was made and if syphilis was proven they were admitted and treatment begun. All correspondence was done with plain paper and envelopes.

All clinic patients with early syphilis were treated by the 8, 16 or 30 weeks plan (Eagle) and late latent by the 40 weeks alternating courses of bismuth and arsenicals.

The three counties in which blood testing has been completed are Wilcox, Sumter and Lee. Wilcox and Sumter are counties in midwest Alabama and Lee is a county in mideast Alabama. Wilcox and Sumter are rural counties with a Negro population of 78.3 per cent and 79.4 per cent respectively. Lee County is also a rural county but is located in the heart of the cotton mill industry and has a Negro population of 56.6 per cent. The normal estimated population of these counties is as follows: Wilcox 23,770; Sumter 23,135 and Lee 32,970. However, using sixty per cent of the population as a rough figure to estimate the population in the age group concerned has shown that the normal estimated figures on population are quite inaccurate at the present time.

TABLE I

PROVISIONAL RESULTS OF BLOOD TEST SURVEY BY RACE, SEX AND AGE IN WILCOX COUNTY

Age	White						Colored						Total	
	Male		Female		Total		Male		Female		Total			
	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.
Under 14	0	10	1	14	1	24	7	36	41	52	48	88	49	112
14	1	31	0	39	1	70	19	231	21	276	40	507	41	577
15	2	47	0	49	2	96	9	218	16	203	25	421	27	517
16	0	55	1	55	1	110	10	235	24	234	34	469	35	579
17	0	41	0	47	0	88	16	193	16	205	32	398	32	486
18	1	22	0	34	1	56	16	160	28	211	44	371	45	427
19	0	8	0	28	0	36	11	104	13	153	24	257	24	293
20	0	10	0	23	0	33	7	122	24	132	31	254	31	287
21	0	10	0	16	0	26	10	99	21	122	31	221	31	247
22	0	9	0	30	0	39	13	85	26	118	39	203	39	242
23	0	14	2	30	2	44	14	83	27	110	41	193	43	237
24	2	9	2	38	4	47	15	61	27	127	42	188	46	235
25	0	11	1	29	1	40	12	65	26	121	38	186	39	226
26	1	13	0	32	1	45	9	57	27	83	36	140	37	185
27	0	20	0	31	0	51	21	77	29	92	50	169	50	220
28	1	24	0	26	1	50	14	74	27	116	41	190	42	240
29	0	27	1	26	1	53	16	69	31	94	47	163	48	216
30	1	17	2	25	3	42	19	84	26	90	45	174	48	216
31	0	19	1	34	1	53	22	73	24	83	46	156	47	209
32	0	24	0	27	0	51	20	61	17	79	37	140	37	191
33	1	26	1	27	2	53	26	80	36	111	62	191	64	244
34	1	17	0	42	1	59	26	51	22	90	48	141	49	200
35	1	20	3	20	4	40	21	70	19	78	40	148	44	188
36	0	24	0	28	0	52	23	62	29	88	52	150	52	202
37	0	28	0	24	0	52	12	49	27	76	39	125	39	177
38	0	29	1	40	1	69	19	73	38	106	57	179	58	248
39	0	31	1	33	1	64	22	88	26	72	48	160	49	224
40	1	24	0	28	1	52	23	63	23	75	46	138	47	190
41	1	20	2	21	3	41	14	60	13	68	27	128	30	169
42	0	19	0	26	0	45	11	50	25	59	36	109	36	154
43	1	29	1	35	2	64	20	54	34	77	54	131	56	195
44	2	25	2	23	4	48	5	32	12	42	17	74	21	122
45	0	23	0	25	0	48	9	38	18	42	27	80	27	128
46	0	16	2	20	2	36	16	48	12	53	28	101	30	137
47	2	29	0	29	2	58	12	28	10	50	22	78	24	136
48	1	18	0	17	1	35	22	42	14	37	36	79	37	114
49	1	23	1	21	2	44	16	36	18	47	34	83	36	127
50	0	3	0	4	0	7	5	17	6	14	11	31	11	38
Over 50	1	11	0	5	1	16	8	39	18	50	26	89	27	105
Not Stated	0	3	0	11	0	14	4	33	12	40	16	73	16	87
Total	22	839	25	1112	47	1951	594	3200	903	3976	1497	7176	1544	9127

TABLE II

PROVISIONAL RESULTS OF BLOOD TEST SURVEY BY RACE, SEX AND AGE IN SUMTER COUNTY

Age	White						Colored						Total	
	—Male—		—Female—		—Total—		—Male—		—Female—		—Total—			
	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.
Under 14	0	6	0	12	0	18	4	19	5	27	9	46	9	64
14	1	17	1	22	2	39	8	78	13	77	21	155	23	194
15	0	49	1	50	1	99	10	188	23	184	33	372	34	471
16	0	39	2	38	2	77	23	201	35	188	58	389	60	466
17	1	47	1	59	2	106	14	195	36	199	50	394	52	500
18	1	43	3	33	4	76	16	175	36	160	52	335	56	411
19	0	20	2	40	2	60	20	148	38	186	58	334	60	394
20	0	10	1	26	1	36	14	106	36	123	50	229	51	265
21	0	13	1	21	1	34	15	75	43	110	58	185	59	219
22	0	8	0	31	0	39	16	72	46	135	62	207	62	246
23	0	13	1	26	1	39	22	69	31	96	53	165	54	204
24	0	13	1	27	1	40	30	57	48	113	78	170	79	210
25	0	9	0	21	0	30	22	62	49	119	71	181	71	211
26	0	10	0	33	0	43	8	59	47	80	55	139	55	182
27	0	6	0	20	0	26	16	49	44	76	60	125	60	151
28	0	13	3	30	3	43	23	61	48	81	71	142	74	185
29	0	14	2	23	2	37	16	59	39	80	55	139	57	176
30	0	17	1	27	1	44	31	78	52	100	83	178	84	222
31	2	18	0	26	2	44	31	65	43	72	74	137	76	181
32	0	27	2	33	2	60	27	71	41	69	68	140	70	200
33	1	22	3	26	4	48	22	53	41	81	63	134	67	182
34	0	13	2	41	2	54	30	73	44	79	74	152	76	206
35	3	21	0	46	3	67	27	70	33	69	60	139	63	206
36	3	20	1	31	4	51	18	57	37	81	55	138	59	189
37	1	23	1	35	2	58	28	57	45	74	73	131	75	189
38	2	26	1	39	3	65	21	70	30	101	51	171	54	236
39	1	32	1	43	2	75	30	66	38	64	68	130	70	205
40	1	31	2	27	3	58	31	73	37	78	68	151	71	209
41	2	26	0	35	2	61	32	50	26	61	58	111	60	172
42	4	27	1	28	5	55	37	50	37	56	74	106	79	161
43	1	23	3	21	4	44	14	51	23	60	37	111	41	155
44	1	35	0	36	1	71	40	86	39	101	79	187	80	258
45	0	21	0	29	0	50	21	42	25	52	46	94	46	144
46	2	34	2	35	4	69	8	36	22	65	30	101	34	170
47	0	20	2	27	2	47	33	44	19	45	52	89	54	136
48	1	20	0	17	1	37	29	58	21	61	50	119	51	156
49	2	24	0	27	2	51	18	46	20	53	38	99	40	150
50	0	11	1	16	1	27	15	36	12	31	27	67	28	94
Over 50	1	21	1	6	2	27	24	50	12	39	36	89	38	116
Not Stated	0	5	1	6	1	11	8	28	11	36	19	64	20	75
Total	31	847	44	1169	75	2016	852	2983	1325	3562	2177	6545	2252	8561

Tables I, II and III show the provisional figures, after one blood test, in the three counties. It should be noted that those under 14 and over 50 who were examined are included. However, the results in these two groups may be abnormally weighted since, except for a few volunteers, all individuals belonged to families where a positive blood had been found.

Table IV shows the percentage of positive blood reactors by race for each county. The highest rates are to be found in Sumter County but the three counties show more than ten per cent of the population between 14 and 50 involved.

Figure III shows the percentage of individuals positive on the original test by race and age groups. The percentage, beginning with the 15-19 age group in the white race, steadily rises until it reaches a peak in the 40-44 age group. In the colored race the rate is frequently more than ten times that in the corresponding white group. There is a steady rise in the Negro race to a maximum in the 30-34 age group. In contrast to the white rate this high rate is maintained.

In Wilcox and Sumter Counties follow-up investigations have progressed sufficiently to make certain additional statistical data available. In Wilcox County, of the 1,544

TABLE III

PROVISIONAL RESULTS OF BLOOD TEST SURVEY BY RACE, SEX, AND AGE IN LEE COUNTY

Age	White						Colored						Total	
	Male		Female		Total		Male		Female		Total			
	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.
Under 14	0	29	1	25	1	54	3	15	0	25	3	40	4	94
14	1	74	2	80	3	154	2	122	10	108	12	230	15	384
15	0	132	0	122	0	254	10	199	15	208	25	407	25	661
16	2	148	0	115	2	263	7	187	22	216	29	403	31	666
17	0	171	3	160	3	331	19	185	27	226	46	411	49	742
18	1	252	0	187	1	439	21	170	21	212	42	382	43	821
19	1	126	3	295	4	421	8	130	40	211	48	341	52	762
20	1	99	3	275	4	374	17	130	33	159	50	289	54	663
21	0	99	2	201	2	300	13	92	34	172	47	264	49	564
22	1	71	1	170	2	241	6	77	27	155	33	232	35	473
23	0	74	1	126	1	200	14	56	40	135	54	191	55	391
24	0	57	1	123	1	180	15	82	41	142	56	224	57	404
25	0	51	2	131	2	182	19	98	50	157	69	255	71	437
26	0	46	2	112	2	158	19	71	39	115	58	186	60	344
27	1	46	1	137	2	183	19	75	35	126	54	201	56	384
28	0	54	2	113	2	167	25	71	31	106	56	177	58	344
29	2	69	4	116	6	185	18	72	42	104	60	176	66	361
30	2	78	1	119	3	197	34	72	58	141	92	213	95	410
31	0	79	3	115	3	194	17	69	45	102	62	171	65	365
32	1	94	9	131	10	225	16	54	29	91	45	145	55	370
33	1	68	0	125	1	193	18	64	26	84	44	148	45	341
34	2	89	2	109	4	198	29	82	36	100	65	182	69	380
35	1	68	4	115	5	183	26	64	41	71	67	135	72	318
36	1	61	3	109	4	170	16	56	26	71	42	127	46	297
37	6	84	3	110	9	194	25	49	28	74	53	123	62	317
38	2	80	3	125	5	205	13	62	29	93	42	155	47	360
39	4	73	2	114	6	187	20	73	30	95	50	168	56	355
40	3	82	4	120	7	202	18	65	34	100	52	165	59	367
41	4	86	2	95	6	181	15	48	19	72	34	120	40	301
42	1	110	3	99	4	209	24	57	23	74	47	131	51	340
43	4	61	4	95	8	156	10	59	28	71	38	130	46	286
44	5	94	2	82	7	176	31	69	32	70	63	139	70	315
45	2	50	1	69	3	119	10	36	19	52	29	88	32	207
46	2	96	3	96	5	192	17	35	11	57	28	92	33	284
47	3	58	1	73	4	131	23	44	22	52	45	96	49	227
48	2	59	3	75	5	134	25	67	8	67	33	134	38	268
49	3	63	1	49	4	112	14	45	12	32	26	77	30	189
50	0	40	2	21	2	61	8	27	13	37	21	64	23	125
Over 50	0	28	0	17	0	45	13	25	6	26	19	51	19	96
Not Stated	0	12	1	16	1	28	9	39	19	52	28	91	29	119
Total	59	3211	85	4567	144	7778	666	3093	1101	4261	1767	7354	1911	15132

TABLE IV

PERCENTAGE OF POSITIVE TESTS BY RACE FOR THREE COUNTIES

	White	Colored	Total
Wilcox	2.4	17.3	14.5
Sumter	3.6	24.96	20.8
Lee	1.8	19.4	11.2
Total	2.2	20.5	14.8

positives found following a first serologic test, 127 (8.2 per cent), proved by repeated tests, not to be syphilitic; 185 have not been proven as yet to be syphilitic, 13 have moved out of jurisdiction and 1,219 have been shown probably to have syphilis. Of these 1,219 cases, 638 were known to the health department, i.e., they had been shown to have syphilis and had received some treatment in the past, and 581 cases were unknown to the health department. Of the 581 cases, 545 have been brought under treatment and 13 have moved out of jurisdiction. The status of infection of these 545 cases was as follows:

Early latent	95
Late latent	436
Cardiovascular	2
Late bone	1
Congenital	11

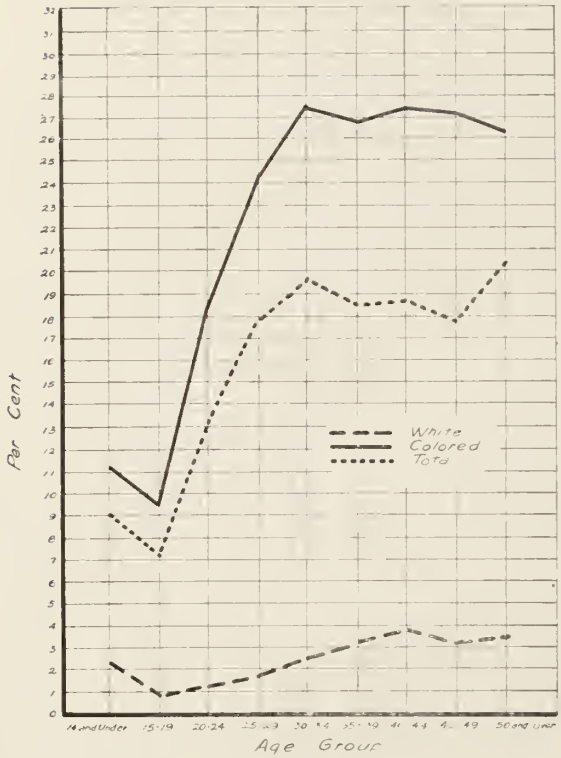

Fig. III. Percentage of Positive Tests by Race and Age Groups

In Sumter County—where the follow-up work is still in progress—2,252 were found to have an original positive Kahn test. Of these, 197, or 8.7 per cent, were proven not to be syphilitic and 588 are not yet proven and 1,367 were shown probably to have syphilis. Of the 1,367 individuals, 663 were known to the health department and 704 were not. Of the 704 suspected cases of syphilis, 502 have been proven and admitted to treatment, and 202 as yet have not been brought in for examination. Of the 502 cases admitted to treatment, the status of infection was as follows:

Early latent	104
Late latent	385
Congenital	13

In Wilcox County, where the work is almost complete, there were 1,409 names of individuals obtained from OPA records who apparently had not presented themselves for a blood test during the two weeks survey period. However, some of these were duplicate names of individuals who had complied with the law. This group who had not complied with the law represents 13.2 per cent of the individuals between the ages 14 and 50. At the completion of the follow-up by correspondence there were only 43 individuals, 1 white and 42 Negroes, who had not presented themselves for a blood test. After a lapse of time this list was turned over to the sheriff. The 42 Negroes could not be found by the sheriff and presumably had left the county. The one white man as yet has not been prosecuted.

On the basis of present experience it appears that between 80 to 90 per cent of the population between the ages of 14 and 50 will appear voluntarily for a blood test. It is, therefore, believed unlikely that law enforcement agencies will have to play any significant part in this program. In the first counties studied, over a thousand hitherto unrecognized cases have been detected and brought under treatment.

Hypertension—Any disease which can be controlled by appropriate therapy, characteristically does not require such a wide variety of therapeutic measures as are now proposed for hypertension, not only in the advertising appeals of manufacturers, but also in the scientific literature. It is well to state at this point that the belief, which still persists in some quarters, that it is inadvisable to lower blood pressure in the presence of essential hypertension has no foundation in fact. In uncomplicated hypertension, vital functions continue normally when blood pressure is reduced, and not only is the reduction of blood pressure in itself not harmful, but it very frequently is highly desirable. There are certain therapeutic measures which are universally accepted and which must always be advised before consideration of any more specific steps. Proper rest, and reduction of nervous stresses and strains are always indicated as are frequent vacations and the acquiring of a calm philosophic outlook on life. Individuals who are overweight should reduce but aside from a reduction diet there is very little evidence that any special food, either by its inclusion or exclusion from the diet, will influence blood pressure. Restriction of moderate use of alcohol and coffee is not imperative unless their use results in abnormal stimulation. Smoking may increase the blood pressure of patients who have hypertension, and if this can be demonstrated by having the patient smoke after his blood pressure has reached a basal value, it is advisable to consider sharp restriction or complete elimination of that habit.

There is a great deal of legitimate skepticism concerning the value of the medical treatment of hypertension. One drug after another has been proposed and many of them have been reported as giving complete or partial symptomatic relief with or without a more or less marked reduction in blood pressure. Experience has shown, however, that practically all these medications exert no specific benefit.—*Massie, J. Kansas M. Soc., Sept.* '44.

MEDICAL EDUCATION IN ALABAMA AND MISSISSIPPI

SEALE HARRIS, M. D.
Birmingham, Alabama

Why is it that Alabama and Mississippi are suffering more acutely because of a shortage of doctors than any other two states in the Union? In my opinion there is one basic reason why the good people of these two states have not enough physicians to provide adequate medical care for their sick; i.e., the lack of four-year medical schools to educate Alabama and Mississippi boys to practice medicine in their home states. Both states have excellent two-year schools; but the students, for whom Alabama and Mississippi have provided from two to four years of academic training and two years in medicine, have had to go to other states for their clinical instruction. It is estimated that three out of five of them do not return to their home states to practice medicine. In other words, "the penny wise and pound foolish" legislators of Alabama and Mississippi, by their failure to provide the money for four-year medical schools, have wasted the money required to give from four to six years of college training to educate doctors, most of whom practice their profession in other states. In Louisiana, Georgia, Virginia, Tennessee and North Carolina, states in which there are two four-year medical schools, the shortage of doctors is less serious.

We have had in Alabama an illustration of the value of a four-year medical school; and a sad example of the destruction of this institution with a fine record, because in 1921 the State Legislature of Alabama failed to appropriate sufficient money to maintain a first-class medical school. The Medical College of Alabama was chartered as the Medical Department of the University of Alabama in 1858, and located in Mobile. In the charter of this institution—said to have been written by Dr. Josiah Nott, one of the greatest surgeons of his time, and the man who first suggested that the mosquito transmits yellow fever and malaria—a scholarship was provided for a student from each of the sixty-seven counties in Alabama. This wise provision resulted in the proper distribution of doctors in the rural districts of Alabama until after the Mobile school went out of existence.

I became professor of medicine in the Medical College of Alabama in 1906. At that time more than one-third of the doctors, and at least fifty per cent of the rural practitioners, of Alabama were graduates of the Mobile school. During the eight years in which I taught medicine in Mobile, we graduated about fifty doctors a year—approximately 400 in the eight years. I am sure that at least 350 of the 400 doctors who graduated from 1906 to 1913, inclusive, located in Alabama. Most of them returned to practice in the counties from which they had been given scholarships.

Today the graduates of the Medical College of Alabama are the backbone of the medical profession of the State. Many of them had county scholarships. As proof of this statement, the names of a few of the graduates of the Medical College of Alabama at Mobile will be mentioned: Caldwell, Chairman of the State Board of Censors, Grote and Duncan of Huntsville; Rayford Hodges, Scottsboro; Powers of Athens; Simpson of Florence; Douglas and Meadows, Birmingham; W. M. Salter, member of the Advisory Committee of the Medical College of Alabama, Neil E. Sellers and Jerre Watson, Anniston; C. L. Salter, member of the committee to select the site of the new four-year medical school, Talladega; P. P. Salter, member of the Board of Trustees of the University of Alabama, Eufaula; W. D. Partlow, the father of the new four-year medical school, Faulk, Durrett, Shirley and A. M. Walker of Tuscaloosa; L. M. Walker of Jasper; I. C. and Marcus Skinner, and Chapman, Selma; Gordon of Marion; Ashcraft and Wimberly, Reform; Austin, State Health Officer, Wallace McGehee and Suggs of Montgomery; Mohr, Gaines, Roe, Beck, Bell, member of the Advisory Committee of the Medical College of Alabama, J. D. Per-

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This article was prepared, by invitation, for publication in *The Mississippi Doctor*. Since it contains information believed to be of equal interest to Alabama physicians, it has been revised for publication in the Journal of the Medical Association of the State of Alabama.

due, member of the State Board of Censors, Acker, Frazer, Howard, Dodson, Gaillard, Paul McGehee, Wilson, Oswalt, Dowling of Mobile; McCafferty of Mt. Vernon; Taylor of Tuskegee; Hamner of Andalusia; and Matthews and Reynolds, Ozark.

The Birmingham Medical College, founded in 1894 by Elias and John Davis, two of the greatest surgeons of their time, graduated probably 700 or 800 physicians before it, like many other independent medical schools of the period, was forced out of existence in 1915. Most of the graduates of the Birmingham Medical College located in Alabama, largely in Birmingham and the northern part of the State. A number of the leading physicians now practicing in Birmingham are graduates of that school.

Remembering that there was no shortage of doctors in Alabama, even in the rural districts, when the Mobile and Birmingham medical colleges existed, one cannot but regret that the State failed to support the Medical College of Alabama at Mobile and that the wealthy citizens of Birmingham failed to endow the Birmingham Medical College. Alabama, like Louisiana, Georgia, Tennessee, North Carolina, Virginia and Maryland, needs two first class medical schools to supply physicians to care for the sick of the State. With one medical school it will be many years before Alabama will have enough physicians to provide adequate medical care for 3,000,000 people.

In the year 1925 there were 2,122 doctors in Alabama, and in 1943 there were 1,864. It is probable that today in Alabama, as in Mississippi, more than fifty per cent of doctors are over sixty years of age—and many have given up practice though their names remain on the rosters of their county medical societies. There has been an increase of doctors in the cities of Alabama, but a great decrease in the rural districts. In 1916 there were 293 members of the Jefferson County (Birmingham) Medical Society, and 133 non-members, a total of 426 doctors, while in 1943 there were 411 members and 72 non-members, a total of 483.

Reference to the 1916 and 1943 Transactions of the Medical Association of the State of Alabama shows the alarming decrease of doctors in the rural counties, due largely to the fact that the Medical College of Alabama at Mobile went out of existence in 1922. In 1916 there were thirteen doctors in Autauga County, while in 1943 there were only seven. In Bullock County (Union Springs—where I practiced medicine for ten years) there were twenty doctors in 1916, while in 1943 there were only seven. In Cherokee County in 1916 there were eighteen doctors; in 1943, only five. In Cleburne County in 1916 there were nine doctors, and in 1943, only three. Neither time nor space will permit my collecting and publishing the statistics for the entire State of Alabama. The total number of doctors in the urban and rural districts of Mississippi are not available, but they probably are as disturbing as those presented from Alabama.

THE NEW MEDICAL COLLEGE OF ALABAMA

The reestablishment of a four-year medical school shows that Alabama has repented her myopic and penurious policy of reducing expenses by destroying the Medical College of Alabama at Mobile, which for sixty years had been educating Alabamians to practice medicine in their native state. Be it said to the credit of Governor Chauncey Sparks, who sponsored the legislation, and the Legislature of 1944, which passed the bill, prepared by Dr. W. D. Partlow, the Medical College of Alabama has been reestablished with sufficient money for buildings and equipment, and for the adequate support, of a first-class four-year medical school. It required twenty years to reduce the number of doctors in the rural districts of Alabama to the point where hundreds of thousands of citizens living in the country and in the small towns cannot secure the services of physicians when they are sick. For years far sighted physicians have foreseen the present lamentable shortage of doctors in Alabama and have pleaded with governor after governor, and with legislators for many years to find the money to support a first-class four-year medical school.

The need of a four-year medical school for Alabama had been agitated for fifteen years, though little progress had been made to secure the school until in 1938 when the Medical Alumni Association of the University of Alabama appointed a committee to promote the plan. In 1940 the Medical Association of the State of Alabama appointed a committee to secure a four-year medical school. Dr. W. D. Partlow, Superintendent of the Alabama Insane Hospitals, was made

chairman of both committees. He worked unceasingly year in and year out to mould public opinion in Alabama to support legislation to provide sufficient funds to support a first-class medical school. His method of approach was through the county medical societies. Local committees were appointed in each county to confer with the legislators in every county in Alabama, urging them to support legislation to provide the money for a four-year medical school. Dr. Partlow's efforts were so effective that Governor Sparks in his inaugural address in January 1944 announced that one of the major objectives of his administration was to be the establishment of a four-year medical school. The next month the Legislature, without a dissenting vote, passed Dr. Partlow's bill providing a million dollars for buildings and equipment and three hundred and sixty-six thousand dollars annually for the maintenance of a four-year medical school in Alabama.

Among the provisions of the bill was that the name of the school should be "The Medical College of Alabama," and that it should be the medical department, and an integral part, of the University of Alabama—just as the charter of the Mobile school provided in 1858. Dr. Partlow, also a graduate of the Medical College of Alabama, saw the wisdom of providing the new school with a name that would give it individual prerogatives though it is in fact the medical department of the University of Alabama.

Dr. Partlow realized that if the President of the University of Alabama had gone to the State Legislature asking for an increase of appropriation to the University providing for the creation of a four-year medical school other state colleges would have insisted upon proportionate increases in their appropriations. He thus avoided antagonisms which might have prevented the appropriation of so large a sum to a department of the University. It was not the officials of the University of Alabama who went to the Governor and the State Legislature; but, it was the Medical Association of the State of Alabama that asked for the money to establish a four-year medical school. Dr. Partlow also foresaw that in future years the dean of the Medical College of Alabama can go to the Legislature and ask for separate appropriations and not have them included in the budget of the University of Alabama.

Dr. Partlow himself received a scholarship from the Medical College of Alabama and he realized the value of helping worthy young men to secure a medical education. He therefore included in his bill an appropriation of four hundred dollars a year to provide a scholarship in each of the sixty-seven counties in Alabama. This wise provision will increase the number of doctors in the rural counties of Alabama.

Dr. Partlow's bill provided for a committee appointed by the Governor to select the site for the new school. This committee, after canvassing the situation thoroughly, after visiting many medical schools in a number of states, and after reviewing the propositions of various cities in Alabama, decided upon Birmingham as the site for the school.

Hillman Hospital, a 750-bed all charity institution supported by the City of Birmingham and Jefferson County will be utilized as a teaching hospital by the new school. The magnificent new 850-bed Jefferson Hospital for private patients, owned by Jefferson County, which is on the same block as the Hillman Hospital, has been placed under the management of Dr. J. W. MacQueen, who has been superintendent of the Hillman Hospital for a number of years. Hillman Hospital will be staffed entirely by the faculty of the medical school, thus giving to the poor of Birmingham County the best possible medical care; and providing the school with sufficient clinical facilities.

President Raymond Paty of the University of Alabama has made a fine beginning in the selection of Dr. Roy Kracke as dean of the new school. Dr. Kracke, Alabama born and Alabama educated at the Alabama Polytechnic Institute and through the two-year medical department of the University of Alabama at Tuscaloosa, graduated from Rush Medical College in 1927. He was instructor, and later professor of pathology in Emory University, Atlanta, for seventeen years. His studies on agranulocytosis gave him national recognition; and his treatise on hematology is considered the greatest book on blood that has been published. Dr. Kracke has opened an office in the Jefferson Hospital in Birmingham, and is now engaged in selecting the faculty of, and pre-

paring plans for, the new school. There can be no doubt of the success of the new Medical College of Alabama.

The physicians assembled at the April meeting of the Medical Association of the State of Alabama in Montgomery expressed their gratitude to two public servants for work well done when they adopted, unanimously, a resolution providing for a committee to raise funds to employ an artist to paint portraits of Dr. W. D. Partlow and Governor Chauncey Sparks to be placed in the library of the new Medical College of Alabama. The funds will be collected, and the portraits presented, by the Association to the University of Alabama to commemorate the achievements of the two men who were largely responsible for the reestablishment of a four-year medical school in Alabama.

A review of the factors responsible for the legislation creating the new four-year medical school in Alabama has been prepared for publication in *The Mississippi Doctor*, hoping that it may be helpful to the Mississippi physicians who are striving for a four-year medical school in their state. The shortage of doctors in Mississippi is even more acute than in Alabama. The only way for Mississippi to supply the needed increase in doctors, particularly in the rural districts, is to create a four-year medical school, in which Mississippi born, and Mississippi educated, boys and girls will graduate in Mississippi to practice medicine in their native state.

STERILITY—WITH SPECIAL REFERENCE TO GYNECOLOGY

T. J. PAYNE, JR., M. D.
Jasper, Alabama

From ancient times the reproach of barrenness has been visited upon the wife, and the cause has been assumed to be some abnormality of her reproductive organs. Consequently, the problem of sterility is assigned by tradition to the gynecologist. The notable progress of the past 20 years has demonstrated not only that husbands carry a considerable share of responsibility but also that depressed constitutional states are causative factors.

In the past, the clinical investigation of a case of sterility started with examination of the female pelvic organs and progressed only to the point where the first real or fancied cause was identified. The normality of all other items was then taken for granted, investigation ceased, and treatment was begun. Different hormone preparations were given without due cause, and even unnecessary operations were advised. Actually, these may have little effect upon the sterility. The complete investigation and treatment of sterility must, therefore, include work in several non-gynecologic fields of practice, especially in urology, intestinal medicine and endocrinology.

Except in the presence of a factor of absolute sterility, it is practically impossible to say whether or not the fertility-sterility level of a man or of a woman is such as will allow procreation. A considerable degree of relative sterility in one partner may be overcome by high relative fertility in the other. The commonest clinical problem, therefore, is not that of one definitely sterile individual mated with one who is unqualifiedly fertile but rather that of two individuals of whom both exhibit some degree of infertility. In many instances both members of such a pair would probably be able to reproduce by more highly fertile mates.

The following nine conditions may be laid down as the requisites of absolute fertility or physiologic perfection of the conceptive mechanism:

1. The testicles must produce normal spermatozoa.

2. The male genital tract must allow the free passage of spermatozoa from the testicles to the urethral meatus.

3. The secretions of the prostate and seminal vesicles must be favorable to spermatozoa.

4. Ejaculated spermatozoa must be safely delivered to and received by the cervix.

5. The endocervical secretions must be favorable to spermatozoa.

6. The uterus must allow the free passage of spermatozoa from the cervix to the uterine openings of the fallopian tubes.

7. The tubes must allow the free ascent of spermatozoa and descent of the ova.

8. The ovariotubal hiatuses must allow the free passage of ova from the ovaries to the abdominal ostia of the tubes.

9. The ovaries must produce normal ova.

Of these, the last five are of concern in the female examination, and we shall take it for granted that the male partner of the couple is normal or nearly so. However, it should be reemphasized that the male should have a complete and thorough examination.

The endocervical mucus, normally a favorable medium for spermatozoa, may become so altered as to be definitely hostile. There are four types of hostility: chemical, bacterial, serologic and mechanical, although the latter is the commonest and most important type. Abnormal viscosity of the endocervical mucus may result primarily from perverted secretory action. This is particularly likely to happen in the presence of chronic passive congestion, of which the background is often a fault of sex hygiene. Secondary factors in the production of viscosity are infection and inadequate drainage, especially the latter. If the os externum is small, the secretions do not escape freely. Instead, the secretions become thickened and inspissated within the cervical canal. Ultimately a tenacious plug forms, the endocervical glands are affected, the secretions become more and more abnormal, and a vicious cycle is established. It is hard for the spermatozoa to break through this barrier in such cases.

Uterine Blockage. Prior to fertilization the function of the supracervical uterus is simple: it serves only as a passageway by which spermatozoa may ascend. There are numerous uterine abnormalities more or less closely related to the sterile state which have, in the past, been erroneously regarded as causes. For example, pregnancy fails to occur in the infantile uterus not because of the maldevelopment of that organ but actually because the associated infantile ovaries do not ovulate. Retrodisplacement of the uterus does not by itself impede conception but it may be complicated by other conditions, such as a cervical anteversion (which prevents insemination), inflammatory damage to the tubes, or congestive changes in the ovaries.

Deficient Oogenesis. An ovary will produce defective ova, or none at all, if its follicular apparatus is underdeveloped, functionally underactive or atrophied. Ovarian underdevelopment is ordinarily only one detail of a more extensive state, female genital hypoplasia, which affects all of the pelvic organs. True infantilism is rare, but juvenilism, a developmental arrest at the prepubertal or early adolescent stage, is exceedingly common. Among the more important causes are failure of the anterior lobe of the pituitary, and less often the thyroid, to function normally, congenital syphilis, anemia, rickets, malnutrition and all types of dietary faults and poor hygiene. Endocrine failure of any major gland may result in deficient oogenesis. Associated symptoms, such as obesity and amenorrhea, are not in themselves causes of sterility as many have believed. They are results of the same underlying cause, a metabolic depression which is usually endocrine in character.

Symptoms such as mittelschmerz and mid-internal bleeding are suggestive of ovulation. More significant however are the findings obtained from endometrial biopsy. The technic is simple and can be performed in the office without anesthetic if a suction curette is used instead of an ordinary curette. The procedure should be repeated at different phases of the menstrual cycle, during which a definite series of histologic changes occurs. The biggest problem is to have the patients examined by a pathologist, or someone trained to recognize the changes which normally take place. If the findings are normal, then one is justified in assuming that normal follicular activity goes on in at least one ovary. If, on the other hand, the endometrial reactions are found to be subnormal, it is highly probable that the cause lies in an insufficiency of ovarian stimuli. The proper stimuli can then be used, depending on the phase which showed the deficiency.

Tests of Tubal Patency. For the testing of patency of tubes there are now two well established procedures, the insufflation of gas and the injection of iodized oil. Insufflation of gas or air involves the introduction of air under pressure. If at least one tube

is patent, some of the gas passes through into the peritoneal cavity. The occurrence of this phenomenon is evidenced in several ways: the gas pressure within the closed system of the apparatus drops as the tubes are forced open; the passage of gas can be heard with a stethoscope applied to the lower abdomen; a subdiaphragmatic pneumoperitoneum is demonstrable by x-ray when the patient assumes the upright position, and the resulting irritation of the subdiaphragmatic peritoneum gives rise to a characteristic shoulder pain.

If two insufflations are done, with at least an interval of a day, the first after a large dose of some antispasmotic drug and the second without preliminary medication, a comparison of the two results often yields additional information. Patency demonstrated at a lower gas pressure on the first occasion than on the second indicates a factor of tubal spasm. On the other hand, if the second test demonstrates patency at lower pressure than does the first, one may draw the conclusion that some preexisting factor of partial obstruction was mechanically removed by the first test.

Hysterosalpingography is the roentgenologic visualization of the uterine and tubal cavities after injection of a medium opaque to the roentgen ray, most commonly a compound of iodine and oil. This procedure gives certain information about tubal patency not always obtainable by gas tests. It differentiates unilateral from bilateral permeability and locates accurately any point of obstruction.

The therapeutic insufflation of gas and injection of oil have proved to be an exceedingly useful item in the management of defects of tubal patency. The procedure appears to be particularly efficacious in partial obstruction, when tubes are permeable but only at abnormally high pressure. Persistence with insufflation and injections is well worth while. In some cases patency becomes established only after many attempts. The mechanism by which these measures effect a cure is uncertain. It may be separation of coherent mucous surfaces, dilatation of the tubes, the straightening of kinks, or the breaking up of light adhesions. A sudden drop after 80 mm. is reached indicates patency. If 200 mm. is obtained, occlusion is assumed. A pressure of 120-140 mm. should be enough. Insufflation should be done one week after menstruation. It is found to be a therapeutic as well as a diagnostic procedure.

OCULAR THERAPY FOR THE GENERAL PRACTITIONER

E. R. NODINE, M. D.
Montgomery, Alabama

This paper claims no originality nor does it propose any new treatments. Even so, it is hoped it will serve as a useful review of some of the standard methods of therapy with which we should all be familiar in daily practice.

Let us start with the lids. The hordeolum or sty is one of the commonest things encountered, and, if small and not pointed, may be aborted with hot saline compresses and sulfathiazole ointment. If it is pointed, it should be opened with a sharp knife under local anesthesia, preferably novocaine. When the Meibomian glands are affected the opening should take place on the conjunctival side. The ointment is continued for two weeks after the incision.

Blepharitis is an infection of the lash follicles and responds well to sulphathiazole ophthalmic ointment preceded by hot packs. Refractive errors should be taken into consideration, and in stubborn cases staphylococcus vaccine must be employed.

In conjunctivitis I am inclined to discourage the use of argyrol or protargol since the germicidal effect is small, and the probability of permanently staining the sclera a muddy brown is very imminent. In simple conjunctivitis I have obtained excellent results for years by one or two applications of 2 per cent silver nitrate, followed by a ¼ per cent solution of zinc in boric acid, drop-

Read before the Association in annual session, Montgomery, April 18, 1944.

ped in the eyes three times daily. This will cure most if not all simple cases of conjunctivitis. Here again the proper glasses must eventually be prescribed if the case is recurrent. There is a type of conjunctivitis that may be encountered in general practice known as vernal catarrh. In these cases a one per cent solution of monohydrated sodium carbonate is useful when employed as eyedrops three times daily.

Gonorrheal conjunctivitis must be treated with the aim in view of preventing corneal complications. If smears from an infant's eye are negative in the presence of a copious discharge, epithelial scrapings from the inflamed parts of the conjunctiva should always be examined. Once the diagnosis is made the case must be isolated and given day and night care. If only one eye is involved the sound eye should be shielded. The eyes should be frequently irrigated with hot saline or boric acid solution, and this should be directed into the upper and lower folds of the conjunctiva, not the cornea.

Next to irrigations the most important therapy is the use of whole sterile milk intramuscularly, 1-2 cc. every other day according to the progress of the case. Here we have also the sulfa drugs as an adjuvant, and sulfathiazole in doses of 1 gr. per pound of body weight per day for four to eight days is indicated. Equal amounts of sodium bicarbonate should be given along with this dosage. If there is a suspicion of corneal involvement, atropine should be instilled assiduously. If the lids are swollen, ice applications are useful.

Let us now consider the cornea. Foreign bodies are most frequently met and their careful removal will prevent infection. One must have proper light and a good spud in order to do this. Often a loupe is essential. Here I want to caution against the use of cocaine. It is highly destructive to the corneal epithelium, and butyn or ½ per cent pontocaine is just as efficacious and not so deleterious. After the removal, a mild irrigation with 1-3000 bichloride is usually sufficient. Do not bandage the eye unless it is very painful. A closed eye can act as an incubator for bacteria. Also it is not necessary to atropinize an eye routinely as this incapacitates a worker's vision for about ten days.

Chemical burns of the cornea should be treated accordingly. In the case of acid burns, copious irrigations with ½ per cent bicarbonate of soda solution are helpful. Alkali burns do well when a 1 per cent acetic acid solution is used. Lime burns, after cleansing, should be treated with installations of 5-10 per cent neutral ammonium tartrate several times a day.

Ulcerations of the cornea should be handled gently with hot packs, applications of trichloracetic acid to the lesion, and atropinization. I have used sulfathiazole ointment in conjunction with the above treatment with a great deal of success.

I will now say a word about iritis. This is a rather frequent condition that presents itself to the general man for treatment. The use of atropine for a prolonged period is imperative. A 1 per cent solution should be instilled in the eye at least three times daily. Hot packs to the eye, hourly if feasible, must be insisted upon. A search for the cause and its removal and treatment go without saying. The teeth and tonsils should be examined, and Kahn and tuberculin tests may be indicated. Non-specific protein therapy, in the form of typhoid vaccine intravenously, 25-30 million organisms per cc., is indicated here in combating baffling cases. This is repeated at three-day intervals if deemed necessary.

Occasionally the general practitioner will be confronted with a case of acute congestive glaucoma which is extremely painful. Very hot applications will stay this temporarily when used with frequent instillations of a combined solution of 1 per cent pilocarpine and ½ per cent eserine in a saturated solution of boric acid.

Diagnosis of Appendicitis—Thirty-one different signs have been listed in the diagnosis of appendicitis. Some are quite obsolete. A sensation of pain or distress in the epigastic region or precordial region on pressure over McBurney's point is still considered suspicious of appendicitis. If the examiner's hand is suddenly released from pressure over McBurney's point and pain is produced, it indicates peritoneal irritation. Localized tenderness on pressure over McBurney's point is characteristic. In acute appendicitis there is often absence of the abdominal reflexes on the right side. Pressure on the left side, over the point corresponding to McBurney's point, will elicit the typical pain at McBurney's point in appendicitis; but not in other abdominal infections. There may be marked relaxation of the abdominal muscles on the right side in chronic recurrent appendicitis.—*Fancher, J. M. A. Georgia, Sept. '44.*

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SURGERY IN PULMONARY TUBERCULOSIS

In his consideration of surgery in the treatment of pulmonary tuberculosis Clagett[1] tells us that "rest is the sheet anchor of treatment; proper sanatorium care is essential. Only by surgical means can an adequate degree of pulmonary rest be achieved in a high percentage of cases. Pulmonary tuberculosis is much more of a surgical disease than is generally appreciated. It is much more of a surgical disease than is duodenal ulcer, for instance. Only 10 to 15 per cent of cases of duodenal ulcer are surgical. Surgical therapy is used in from 50 to 80 per cent of cases of pulmonary tuberculosis. The development of the surgical treatment of pulmonary tuberculosis has been accomplished largely during the last fifteen years. The advance has been so rapid that only physicians and surgeons particularly interested in this disease have been able to keep abreast of developments. With the development of the new field of chemotherapy one can anticipate an even stronger attack on tuberculosis." And we are also told that "the modern surgical treatment of this condition has been developed by a process of evolution. It must be admitted that much of it has been accomplished by methods of trial and error and that there is room for much improvement. Nevertheless, there is no question that surgical collapse has tremendously improved the results obtained in pulmonary tuberculosis and that this method of treatment has proved indispensable."

The Rochester observer goes on to state that "pneumothorax and thoracoplasty stand out as the surgical procedures that have the widest application and have produced the best results generally, but there are many other procedures which can be used to good advantage in selected cases. . . . Essentially, pneumothorax should be undertaken in cases of pulmonary tuberculosis in which a cavity has formed or the disease is progressive if the patient does not respond favorably to the usual conservative medical measures and rest in bed. It is now the most widely used of all collapse procedures and, as a rule, should be attempted before any other type of collapse therapy is considered." The author says that extrapleural thoracoplasty is probably the next most effective type of surgical collapse and that it can be used on about 10 per cent of patients in most sanatoriums. Lobectomy and drainage operations are most difficult and the results are apt to be discouraging. "Phrenic nerve paralysis, particularly of the permanent type, is not used as frequently in most sanatoriums as it was formerly."

Most informed physicians are well aware of the great strides made in this field during the last fifteen years, but it is probable that only a few realize fully how effective some of the new surgical methods are and upon what an extensive scale they are being carried out. Certainly it will surprise many to learn that pulmonary tuberculosis is more of a surgical disease than is duodenal ulcer.

And it is encouraging to realize again how progressive medicine remains. Tuberculosis has long been on the run and is nothing like the universal scourge that it only recently was. Yet newer and more effective means of combating it continue to appear. And this is good news indeed at this particular time because, due to famine and other wartime privations and hardships, a great increase in tuberculosis may reasonably be expected in many parts of the world.

1. Clagett, O. T.: Some Surgical Procedures for Pulmonary Tuberculosis, Proc. Staff Meet., Mayo Clin. 19: 228 (May 31) 1941.

STATE DEPARTMENT OF HEALTH

BUREAU OF ADMINISTRATION

B. F. Austin, M. D.
State Health Officer

RATS AND DISEASE

In March 1900, the dead body of a Chinaman was discovered in the basement of a San Francisco hotel. Those handling the body noticed peculiar markings on it and called in medical authorities before preparing it for burial. Their examination brought the startling discovery that the Chinaman had succumbed to plague. Thus it became known that this frightful disease, which had brought terror and death by wholesale in many other parts of the world, had at last come to the United States.

The public health officials acted promptly but, as it turned out, ineffectively. Twelve city blocks in the district where this Chinaman had lived were roped off, and policemen were detailed to see that the residents of that area were kept inside. They found the task too much for them, however, and the almond-eyed Orientals thought it great fun to slip through the blue-coated cordon. The health authorities then made an effort to keep the infection within the city at least by restricting the travels of Chinese wishing to leave. Later they expanded the area of modified quarantine by making careful examinations of passengers at state lines in the hope that cases would not occur outside California.

Fortunately, the cases of the disease were comparatively few in number, but there was no question as to their existence, and their potential peril to the entire city and state was inescapable. Finally the U. S. Treasury Department sent a commission of three outstanding medical men—Dr. Simon Flexner, of the University of Pennsylvania, Dr. L. F. Barker, of the University of Chicago, and Dr. F. G. Novy, of the University of Michigan—to make an impartial but thoroughgoing study of the plague situation and report on its findings. Arriving in San Francisco in January 1901, it reported six cases of plague during the next two or three weeks.

A clean-up drive soon got under way, but, without the wholesale destruction of rats, it could hardly have been expected to accomplish much. Actually, it did not. New cases began developing here and there until early in 1904. When this, the first plague epidemic to occur in the United States, finally came to an end, 121 persons had developed the disease. All but eight of them had succumbed to it.

Medical history has since emphasized the wisdom of attacking plague by destroying rats; for the rat is the chief and perhaps most dangerous agent of transmission. However, Californians later learned what people of other states have also learned—that other rodents can and do serve as agents of transmission. Among them is the usually harmless ground squirrel.

"A man would go hunting ground squirrels on Saturday or Sunday," Dr. C. W. McCoy declared in an unpublished paper quoted by Dr. Geddes Smith. "The following Tuesday or Wednesday he would develop headache and fever, and perhaps backache and chill. The next day there would be a bubo, and the case from that time forward would run the usual course of plague."

This discovery opened up frightful new possibilities of plague infection. As difficult as it was, and is, to exterminate rats wholesale, it can be done, and at a relatively moderate cost. Although they may be found almost anywhere, certain known conditions are most favorable for their growth and propagation, and the campaigns for their eradication can be concentrated upon the places where they are known to exist in large quantities, such as warehouses, food handling establishments, and grocery stores. But that is not true with respect to the ground squirrel, which runs wild, is pretty much of an individualist, has little inclination to stay long in one place and can find food and shelter in the fields and forests.

Unfortunately, still other rodents are known to play a part in the transmission of this disease. Among them are chipmunks, prairie dogs, jackrabbits, marmots, mice, wood rats, pack rats, cottontail rabbits, badgers, brush rabbits and gophers. One of

these may visit a plague-infested community, become infected itself, and then travel a considerable distance from the source of its own infection, passing it on to one or more rats or other rodents. Thus it becomes extremely difficult to localize an outbreak.

The already mentioned Dr. Geddes Smith commented upon this growing danger as follows in his authoritative volume, *Plague On Us*:

"What does this mean for human beings? At the least, it means that those who hunt and dress ground squirrels court infection, and that now and then someone gets plague by a curious mischance: a boy is bitten by a squirrel, or a woman buries a dead chipmunk, or a university professor is troubled by fleas at his mountain camp. Two small epidemics in California cities have been traced to wild rodents: twelve persons died in Oakland in 1919, thirty in Los Angeles in 1924. In Los Angeles squirrels seem to have passed the infection to town rats; if this happened where rats were common enough a slum epidemic might result. . . .

"So we are no longer dependent upon Asia for plague; we have our own reservoir, a vast and probably permanent one. We cannot wipe out the ground squirrels and their susceptible relatives in the great open spaces. It is possible, in 'scorched earth' fashion, to keep the squirrels away from the immediate vicinity of a city, and to exercise some control over the squirrel population in and about recreation areas by periodic poisoning. The public health men try to keep an eye on the wandering bacillus so that they will know where to be on guard against human infection. Several teams of workers, state and federal, are continuously hunting squirrels and other wild rodents and examining them for evidences of plague. Sometimes these workers find infection in apparently healthy herds by making a sort of soup of their fleas and injecting this into guinea-pigs. The conditions which make an American squirrel-flea infective as well as infected are being studied with great care."

A similar observation is made by an anonymous writer in the medical publication *What's New*. He discusses the danger to which other parts of the country are exposed as a result of the gradual widening of the area of plague infection as follows:

"Eradication of the plague-infected wild rodent is a well-nigh superhuman task, now that infection has been allowed to reach inland from the port cities. But there is much that remains to be done in elimination of the domestic or city rodent. The garbage can rat is on the increase. Strikes of garbage collectors, politically manipulated city budgets and other modern devices have brought the return of insanitary dumps reminiscent of the Middle Ages. It is not pleasant to contemplate the possible result of a transfer of fleas from the plague-infected wild rodent to the rat foraging in every alleyway of our towns and cities.

"Each year the sylvatic infection moves farther east. Great cities lie in its path. At some time not too far in the future the sylvatic plague will make contact with some of these centers of large rat and human population. What will be the result? No one could pretend to answer this question with complete assurance. If, when this event occurs, our society is in a reasonably orderly state, with public health services functioning efficiently, there is not apt to be any great disaster, but if this event should coincide with some period of civil upheaval, the imagination hesitates to portray what might occur. In picturing the disorganization of society the layman is prone to think of destruction as being wrought by armies, mobs or other human agencies. The bacteriologist, however, could add another element to this dismal picture which would make any destruction that man can accomplish today appear to be of very minor significance."

Fortunately, there have been no well authenticated cases of plague in Alabama, but the presence of plague-infected rats in an ever-increasing area should prevent either the public health authorities or people generally from indulging the optimistic belief that "it cannot happen here." No doubt many of the people of Galveston, New Orleans, Pensacola and a number of other cities were inclined to be complacent about it until they found themselves face to face with its actual presence among their own friends and neighbors.

Unfortunately, Alabama would probably be an unusually fertile field for plague, once it crossed our borders, because of this State's normally large rat population. Our millions of rats, destroying valuable property and spreading disease in both urban and rural areas, have made endemic typhus fever a major public health problem here. Last year for instance, no fewer than 380 cases of this disease were reported in this State. The same flea which transmits one of these diseases also transmits the other. Thus it is plain that, once infected with the germs of the plague, they would spread it as widely and infinitely more fatally than they are now spreading endemic typhus fever.

Needless to say, the Alabama public health authorities are fully awake to this danger and are preparing to deal with it when and if it ceases to be a potentiality and becomes an actuality in this State. Fortunately, a vigorous campaign against the plague has been under way here for a number of years, although it has not been known

as such. Year after year trained public health workers have been engaged in extensive rat-eradication campaigns in those communities where endemic typhus fever has been particularly prevalent. Trapping, gassing, poisoning, and other methods of destruction have been employed on a wholesale scale.

The public health authorities doing their best to prevent San Francisco's first cases from developing into a serious epidemic met the same fate which others, before and since, have often met whenever they tried to meet such problems honestly and with complete frankness. Just as Alabama's first State Health Officer, Dr. Jerome Cochran, was almost run out of Decatur when he announced publicly that there was a case of yellow fever in the town in 1888, so these men's announcement that cases of plague had been found in that city stirred politicians, business people and many others to indignant vocal outbursts.

As already pointed out, even the Chinese, who seemed to have most to fear from the threatened outbreak, went to great pains to make more difficult the work of their would-be protectors. Some of them barred their doors. Others concealed the sick members of their families to prevent them from being examined by the health authorities. Whenever they were tried for infractions of the sanitary regulations many would challenge their legality and whittle down their effectiveness.

It is not anticipated that difficulties of this sort would be placed in the way of public health workers seeking to prevent or curb a plague outbreak in this State. There is every reason to believe that they would receive the complete and hearty cooperation of officials, private citizens and organizations, all anxious to do everything possible to aid in this work of health-building and life-saving. There has been a tremendous change in public opinion in this regard since 1900.

It is hoped that the tragedies which plague has brought to many other parts of the world will never be repeated in Alabama. There is no wisdom, however, in denying that this possibility exists, and the writer wishes his readers to become fully aware of it. For their own sakes and the sake of their friends and neighbors, they should destroy as many rats in their homes, stores and warehouses as they can. They should cooperate wholeheartedly with municipal rat-eradication campaigns. They should rat-proof their buildings, if possible. They should, in brief, wage intensified year-round warfare against the rodents which may bring this disease and others into their homes and families.

BUREAU OF PREVENTABLE DISEASES

D. G. Gill, M. D., Director

PREVALENCE OF COMMUNICABLE DISEASES IN ALABAMA
1944

	June	July	E. E.* July
Typhoid	5	27	56
Typhus	43	155	46
Malaria	314	547	832
Smallpox	0	0	0
Measles	312	56	138
Scarlet fever	20	20	41
Whooping cough	122	153	152
Diphtheria	5	20	33
Influenza	61	52	28
Mumps	173	87	49
Poliomyelitis	8	34	13
Encephalitis	1	1	2
Chickenpox	24	9	15
Tetanus	3	8	4
Tuberculosis	277	261	298
Pellagra	2	7	41
Meningitis	22	22	8
Pneumonia	181	159	91
Trachoma	0	0	0
Tularemia	0	2	1
Undulant fever	3	18	9
Dengue	0	0	0
Amebic dysentery	3	51	0
Cancer	173	313	0
Rabies—Human cases	0	0	0
Positive animal heads	15	0	..

As reported by physicians and including deaths not reported as cases.
*E. E.—The estimated expectancy represents the median incidence of the past nine years.

Waterhouse-Friederichsen Syndrome—The Waterhouse-Friederichsen syndrome is seen chiefly in children and young adults. Approximately forty per cent of the cases are due to a fulminating meningococcemia, the remainder of the cases being due to various other organisms such as the streptococcus, staphylococcus, pneumococcus and Friedlander bacillus. The disease is characterized by an abrupt onset with fever, malaise, generalized muscular pain and vomiting. No neurological signs are present in the great majority of cases. In the first few hours of the disease, petechiae make their appearance with diffuse purpura developing rather rapidly. There is also associated with the purpura a reduction in the platelet count. A blood culture reveals the type of organism producing the syndrome. In the majority of cases the disease is quite fulminating with death occurring in six to twenty-four hours from the onset. The spinal fluid is essentially negative. However, if the patient survives the first twenty-four hours, signs of meningitis are present.—*Day, J. Kansas M. Soc., August* '44.

BUREAU OF VITAL STATISTICS

Ethel R. Hawley, Acting Director

PROVISIONAL MORTALITY STATISTICS

REPORTED BIRTHS, STILLBIRTHS, DEATHS FROM CERTAIN IMPORTANT CAUSES AND RATES*— ALABAMA, JUNE 1944, 1943, 1942

Births, Stillbirths, and Causes of Death	Number of Deaths Registered—June 1944			Rate (Annual Basis)		
	White	Colored	Total	1944	1943	1942
Births (exclusive of stillbirths)	**	**	5676	23.5	25.2	22.9
Stillbirths	**	**	192	32.7	28.6	35.3
Deaths (exclusive of stillbirths)	1146	990	2136	8.8	8.3	9.2
Infant Deaths:						
Under one year	155	150	305	53.7	46.9	50.9
Under one month	105	94	199	35.0	27.6	30.3
Typhoid and paratyphoid 1, 2	2		2	0.8	0.4	0.4
Epidemic Cerebrospinal Meningitis 6	7	4	11	4.6	0.4	0.9
Scarlet fever 8						0.4
Whooping cough 9	4	7	11	4.6	4.1	3.5
Diphtheria 10						0.4
Tuberculosis, all forms 13-22	40	58	98	40.6	38.8	41.0
Malaria 28		3	3	1.2	2.9	3.9
Syphilis 30	5	28	33	13.7	6.2	13.1
Influenza 33	7	8	15	6.2	5.8	7.8
Measles 35	5	2	7	2.9	1.2	1.3
Poliomyelitis 36	1	1	2	0.8		
Encephalitis 37	1	1	2	0.8	0.8	0.4
Typhus fever 39	4		4	1.6	0.8	1.7
Cancer, all forms 45-55	118	59	177	73.3	64.4	69.0
Diabetes mellitus 61	13	6	19	7.9	10.3	15.3
Pellagra 69	5	4	9	3.7	3.7	6.1
Alcoholism 77					0.4	1.7
Intracranial lesions 83	97	78	175	72.4	80.9	77.2
Diseases of the heart 90-95	238	173	411	170.2	147.8	185.0
Diseases of the arteries 96-99	18	10	28	11.6	10.7	11.3
Bronchitis 106	2	4	6	2.5	1.6	0.9
Pneumonia all forms 107-109	52	41	93	38.5	26.0	33.2
Dairrhea and enteritis (under two) 119	22	21	43	17.8	23.1	24.4
Diarrhea and enteritis (two and over) 120	4	5	9	3.7	3.7	7.0
Appendicitis 121	8	12	20	8.3	6.2	7.4
Hernia intestinal obstruction 122	8	9	17	7.0	7.0	7.0
Cirrhosis of the liver 124	10	4	14	5.8	4.1	5.7
Nephritis all forms 130-132	80	90	170	70.4	76.8	73.3
Diseases of the puerperal state 140-150	4	16	20	34.1	44.5	53.3
Puerperal septicemia 140, 142a, 147	1	5	6	10.2	14.3	20.2
Suicide (163-164)	9	1	10	4.1	7.8	6.1
Homicide 165-168	9	18	27	11.2	13.2	15.7
Accidental deaths (exclusive of motor vehicle) 169, 171-195	75	52	127	52.6	48.7	51.9
Motor vehicle 170	22	8	30	12.4	11.1	17.9
All other known causes	234	136	370	153.2	131.3	147.1
Ill defined and unknown causes 199-200	42	131	173	71.6	82.6	71.6

**Not available.

*Birth and death rates per 1,000 population; infant death rate per 1,000 live births; stillbirths per 1,000 total births (inclusive of stillbirths); from specific causes per 100,000 population; from puerperal causes, per 10,000 total births.

BUREAU OF SANITATION

T. H. Milford, M. S. in S. E., Director

PLUMBING CODES

Contributed by

Arthur N. Beck

Sr. San. and Pub. Health Eng.

As we think of it today plumbing of a building means the pipes for distributing the water supply, the fixtures for using the water, and drainage pipes for removing waste water and sewage, together with fittings and appurtenances all within or adjacent to the building. Connections for rain water are also included if the water is discharged to the house drain.

Plumbing fixtures are the terminals of the water supply systems and are the beginning of the sewerage systems. This is one reason why a certain degree of governmental control of plumbing is justifiable. The total number of plumbing fixtures in a town or city controls, to a large extent, the quantity of water used and at the same time determines the flow in sewers which affects materially the cost of pumping and treatment of sewage.

The proper disposal of human excreta is the greatest sanitary problem in the world and is best solved by the installation of modern plumbing connected to an adequate sewerage system including necessary treatment facilities.

Many diseases are directly and indirectly traceable to contact with human excreta. It is important, therefore, that plumbing be installed to carry all wastes from structures in such a manner that there will be no chance of disease transmission.

Leaking house drains may pollute the soil which, in turn, may cause the pollution of water supplies. Leakage of drains inside the house is dangerous to the inhabitants as food and other articles may become polluted by coming directly in contact with the wastes or by the medium of insects.

The proper installation and permanency of tight joints and water seals between fixtures and drains not only prevent the passage of foul air but also exclude the passage of insects from the street sewer to the house. Cockroaches, water bugs and other insects having access to the sewer and the house interior may spread disease and would be a serious menace to health.

In recent years the importance of the construction and arrangements of plumbing fixtures has been very forcibly brought to the attention of the public and public health officials by outbreaks of diseases traceable to the return of sewage to the water supply system.

Direct connections between the water supply and sewerage system may cause pollution of the water supply. Flush valves improperly installed, secret waste and overflows, and faucets discharging to a fixture below the overflow of the fixture are dangerous as back siphonage may occur should a drop in pressure in the water supply develop.

There are many people even today who associate foul air with disease and believe that disease may be transmitted by contact with such air. Experiments have definitely refuted this conception.

The air in sewers may often contain gases derived from the decomposition of organic matter and also gases discharged to the sewers from industrial plants. These gases may not only be objectionable to the sense of smell but may, in extreme cases, cause headaches and even nausea. Although sewer gases do not affect public health from a bacteriologic standpoint, health may be influenced by factors which do not cause specific diseases.

It is for the reasons mentioned that regulations by governmental agencies are justifiable and why plumbing in all communities should be installed in accordance with the best knowledge of sanitary science.

Realizing the importance of plumbing regulations, a group of architects and engineers experienced in matters of building regulations organized in May 1921, in the Department of Commerce, an organization called The Department of Commerce Building Code Committee. A subcommittee to study plumbing regulations and to make recommendations was appointed in September 1921. The subcommittee finished its final report in 1928 and the complete works were published in 1931. The volumes include a recommended plumbing code based on the following twenty basic plumbing principles.

1. All premises intended for human habitation or occupancy shall be provided with a supply of pure and wholesome water, neither connected with unsafe water supplies nor cross connected through plumbing fixtures to the drainage system.

2. Buildings in which water-closets and other plumbing fixtures exist shall be provided with a supply of water adequate in volume and pressure for flushing purposes.

3. The pipes conveying water to water-closets shall be of sufficient size to supply the water at a rate required for adequate flushing without unduly reducing the pressure at other fixtures.

4. Devices for heating water and storing it in boilers, or hot-water tanks, shall be so designed and installed as to prevent all dangers from explosion and *also prevent a back flow of hot water through a meter connected with a public water supply.*

5. Every building intended for human habitation or occupancy on premises abutting on a street in which there is a public sewer shall have a connection with the sewer, and, if possible, a separate connection.

6. In *multiple dwellings* provided with a house drainage system *there shall be for each family at least one private water-closet.*

7. Plumbing fixtures shall be made of smooth nonabsorbent material, shall be free from concealed fouling surfaces, and shall be set free of inclosures.

8. The entire house drainage system shall be so designed, constructed, and maintained as to conduct the waste water or sewage quickly from the fixture to the place of disposal with velocities which will guard against fouling and the deposit of solids and will prevent clogging.

9. The drainage pipes shall be so designed and constructed as to be proof for a reasonable life of the building against leakage of water or drain air due to defective materials, imperfect connections, corrosion, settlements or vibrations of the ground or building, temperature changes, freezing, or other causes.

10. The drainage system shall be provided with an adequate number of cleanouts so arranged that in case of stoppage the pipes may be readily accessible.

11. Each fixture or combination fixture shall be provided with a separate, accessible, self-scouring, reliable water-seal trap placed as near to the fixtures as possible.

12. The house-drainage system shall be so designed that there will be an adequate circulation of air in all pipes and no danger of siphonage, aspiration, or forcing of trap seals under conditions of ordinary use.

13. The soil stack shall extend full size upward through the roof and have a free opening, the roof terminal being so located that there will be no danger of air passing from it to any window and no danger of clogging of the pipe by frost or by articles being thrown into it or of roof water draining into it.

14. The plumbing system shall be subjected to a water or air pressure test and to a final air-pressure test in such a manner as to disclose all leaks and imperfections in the work.

15. No substances which will clog the pipes, produce explosive mixtures, or destroy the pipes or their joints shall be allowed to enter the house-drainage system.

16. Refrigerators, ice boxes, or receptacles for storing food shall not be connected directly with the drainage system.

17. No water-closet shall be located in a room or compartment which is not properly lighted and ventilated to the outer air.

18. If water-closets or other plumbing fixtures exist in buildings where there is no sewer within reasonable distance, suitable provision shall be made for disposing of the house sewage by some method of sewage treatment and disposal satisfactory to the health authority having jurisdiction.

19. Where a house-drainage system may be subjected to back flow of sewage, suitable provision shall be made to prevent its overflow in the building.

20. Plumbing systems shall be maintained in a sanitary condition.

The need for a generally accepted standard code of minimum requirements for plumbing has been recognized for some time. The Department of Commerce code is apparently inadequate with respect to present plumbing fixtures and consolidated detailed requirements. In April 1941, a subcommittee was appointed by the American Standards Association to study the plumbing codes now available and to develop an American Standard Plumbing Code which would be acceptable to the nation as a whole. At the present time thirty national organizations and governmental bodies are represented on the committee. This work will set forth detailed plumbing regulations with respect to fixtures, materials, drains, venting, inspection and tests, maintenance and administration.

Food Poisoning—To control food poisoning, public health agencies employ a long term program consisting of generalized inspection and supervision of all food handling agencies and proper education of food handlers. This program is familiar to all trained public health workers, and is not of great interest to the general practitioner. The public health agency must be prepared to meet the sudden emergency of an outbreak of food poisoning. It is essential that the medical profession give immediate notice to the health department upon the appearance of the first few cases. This is necessary so that specimens of feces and vomitus may be collected before the use of any medication which might interfere with laboratory findings. The knowledge obtained will be of value to the physician since he will know with which type of food poisoning he is contending. Its value to the health officials cannot be overestimated since the type of food poisoning encountered often indicates the point of breakdown in the inspection system, *i. e.*, rodent control, improper refrigeration, and so forth.—*Wermer, Texas State J. Med., August* '44.

BUREAU OF LABORATORIES

Samuel R. Damon, Ph. D., Director

SPECIMENS EXAMINED

JUNE 1944

Examinations for diphtheria bacilli and Vincent's	292
Agglutination tests, (typhoid, Brill's, undulant fever)	957
Typhoid cultures (blood, feces and urine)	1,011
Examinations for malaria	1,533
Examinations for intestinal parasites	2,241
Serologic tests for syphilis (blood and spinal fluid)	36,089
Darkfield examinations	39
Examinations for gonococci	3,294
Examinations for tubercle bacilli	1,691
Examinations for Negri bodies (microscopic)	69
Water examinations (bacteriologic)	1,334
Milk examinations	2,137
Miscellaneous	40
Total	51,127

JULY 1944

Examinations for diphtheria bacilli and Vincent's	360
Agglutination tests (typhoid, Brill's, undulant fever)	1,040
Typhoid cultures (blood, feces and urine)	1,069
Examinations for malaria	1,569
Examinations for intestinal parasites	1,974
Serologic tests for syphilis (blood and spinal fluid)	37,599
Darkfield examinations	50
Examinations for gonococci	3,426
Examinations for tubercle bacilli	1,476
Examinations for Negri bodies (microscopic)	56
Water examinations (bacteriologic)	953
Milk examinations	1,879
Miscellaneous	990
Total	52,441

AUGUST 1944

Examinations for diphtheria bacilli and Vincent's	715
Agglutination tests (typhoid, Brill's undulant fever)	1,153
Typhoid cultures (blood, feces and urine)	1,163
Examinations for malaria	1,453
Examinations for intestinal parasites	2,203
Serologic tests for syphilis (blood and spinal fluid)	28,834
Darkfield examinations	23
Examinations for gonococci	3,599
Examinations for tubercle bacilli	1,670
Examinations for Negri bodies (microscopic)	69
Water examinations (bacteriologic)	1,308
Milk examinations	2,290
Miscellaneous	960
Total	45,440

AMERICAN MEDICAL ASSOCIATION NEWS

ONE OF EVERY TWELVE CHILDREN IN U. S. TODAY IS ILLEGITIMATE

WRITER IN HYGEIA POINTS OUT THE PROBLEMS OF ILLEGITIMACY IN CONNECTION WITH THE ISSUANCE OF BIRTH CERTIFICATES

One out of every twelve children in the United States today is illegitimate, Halbert L. Dunn, M. D., Chief of the Vital Statistics Division, United States Bureau of the Census, Washington, D. C., declares in the October issue of Hygeia, The Health Magazine. Although at the present time thirty-two states have attempted to deal with the illegitimacy problem in connection with birth certificates, he says, there has yet to be worked out a perfect solution to this problem.

"In 1942," Dr. Dunn says, "the United States Bureau of the Census recorded 83,459 births as illegitimate. This represented approximately four babies of every one hundred born. It is likely that this number of illegitimates does not begin to be a measure of the problem, since many doctors are loath to report the true facts. Some states prohibit the recording of illegitimacy by law. However, there are ways of estimating the facts. For instance, birth certificates which do not carry the name of the father usually indicate that the child is illegitimate. It is probably safe to estimate that the total number of illegitimate births is approximately twice as great as the number reported as such. One in each dozen born is illegitimate—one out of every twelve little tots in kindergarten!"

There are many who cannot understand why the unfortunate who is illegitimate must suffer for it, Dr. Dunn points out. They cannot understand why the registrar sends to an illegitimate person a birth certificate revealing that fact. The answer to the problem is not an easy one, the doctor continues. At the present time, thirty-two states have attempted to deal with the legitimacy problem either by legislation or by rules and regulations which are fashioned so as to require extraordinary care in handling the birth records of such children. In general, the laws of the several states have attempted to solve the problem either by setting up protected or sealed files for illegitimate birth records, by refusing to issue complete certifications for illegitimate births or by fabricating a new birth certificate for adopted or legitimatized children. Some states use a combination of all three methods. None of the various methods have worked out very satisfactorily.

"As long ago as 1935," Dr. Dunn says, "in a report to the Vital Statistics Section of the American Public Health Association by a committee on the Registration of Births Out of Wedlock, a minority report pointed out the possible way around this difficulty—'Universal adoption by state bureaus of vital statistics of certification of birth for all ordinary social purposes for which proof of age is needed, on a form that shows merely the person's name, sex and place and date of birth, with no reference to his parentage.'

"Nationwide use of a short form certification containing name, birth date, birth place, sex and birth certificate number might go far toward solving the crazy quilt of tragedy which has blanketed the intelligent use of the birth certificate information. Whether a person was born legitimate or illegitimate, he would then receive only an abbreviated statement in lieu of a certified copy of his birth certificate.

"However, it is recognized that for some purposes the facts of paternity must be known. For instance, paternity information would probably have to be released to government agencies serving veterans so that they could authorize benefit payments to their dependents. Under what protection complete certifications of birth could be given for such purposes poses a real question as yet unanswered.

"Several elements are necessary for a lasting solution of the 'birth certificate problem.' In one way or another these must be incorporated into whatever plan emerges and is generally accepted.

"(1) Vital records, once they are officially registered, must not be altered or made to appear other than what they are. This is true not only of birth certificates but also of those for adoption, legitimization, change of name, marriage, divorce and death. Any

other course leads to disaster, since if even 1 per cent of the records should be false it will throw doubt on the authenticity of the remaining 99 per cent. One counterfeit dollar bill in each hundred would be an analogous situation.

"(2) The very fact that birth certificates must not be altered—once they are officially registered—is the best reason they must be made accurate in the first place. Since it is difficult to protect the rights of an illegitimate child unless the true facts concerning his parents are known, the importance of properly registering all these facts in the first place is doubly emphasized.

"(3) Because the true facts must be placed on file in official hands, it is common sense that all such records must be protected against improper disclosure. Just who could and could not see them would have to be clearly specified. A short form of certification of birth for every one would be one way in which disclosure could be avoided. Certification of the facts concerning parentage directly to such agencies as those involved with administering dependency allotments would be another.

"(4) Justified official amendments to the birth certificate as well as other vital records such as change of name, adoption and the like must be linked to the birth certificate of the individual. Without such linkage there would be no way to avoid alterations in the original birth certificate.

"Of these various elements the weight of evidence at present would seem to indicate that the short form of birth certification is coming into widespread favor as the next sure cure. In theory, its general use looks as though it might hold out a real solution to the crazy quilt tragedy of the birth certificate. It would prove the facts concerning date and place of birth just as well as a complete certified copy. It would serve over 95 per cent of the needs of the public. This in turn would mean that the great majority of the people legitimately born would not need a complete certification of birth and that consequently the added protective devices necessary for the illegitimate would not be so apparent as they are now.

"However, the short form certification should not be considered as a cure-all. The reason for failure to find a solution in the past has been the lack of a well thought out plan. A cure can and must be found, but it will probably come only when a well balanced and carefully tested plan can be applied uniformly throughout all the states. If such a plan can be created and agreed on it will undoubtedly be followed by the uniform legislation and methodology required to implement it."

PENICILLIN SUCCESSFULLY USED FOR INFECTION OF EYE SOCKET

The successful treatment with penicillin of a case of orbital cellulitis, a dangerous disease which may lead to blindness and even loss of life, is reported by H. O. Sloane, M. D., Philadelphia, in The Journal of the American Medical Association for September 16.

The case reported was that of a boy of 12 whose left eye was involved, the infection originating in one of the sinuses. Sulfadiazine was tried without affecting the condition in any way and operation was contemplated both for the sinus condition and locally to establish drainage and relieve the inflammation and swelling of the tissues in the socket of the left eye. However, Dr. Sloane says, under the continued use of penicillin administered by injection into a vein for a period of ten days the condition cleared up completely, so that it was unnecessary to operate.

It has been argued that if tuberculosis were made uniformly compensable, it would soon be wiped out; but it is obviously unfair to ask industry and the insurance carrier to take upon their shoulders the accrued liabilities of tuberculosis in industry. When industry and the worker realize the terrible cost in manpower and human suffering that tuberculosis entails and that a method of control is feasible, then case finding in industry will be more eagerly accepted and may in fact, be one of the outstanding contributions toward public health that will survive this war.—*Tabershaw in Industrial Medicine.*

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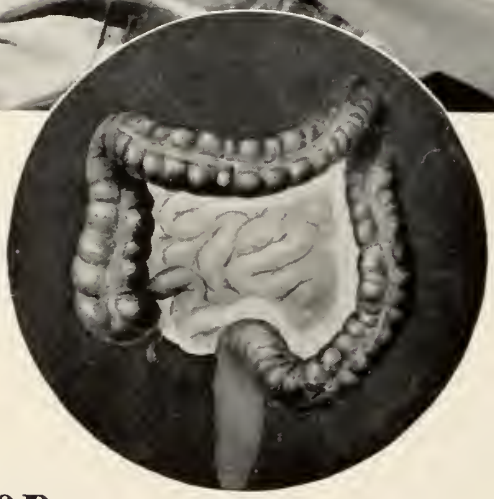

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PSYCHIATRIC PROBLEMS IN FLYING PERSONNEL

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In the war neuroses, particularly those seen in flying personnel, we find conditions of life which frequently place an immediate and overwhelming strain upon the instinctual endowment of man. An unsatisfactory solution of a conflict between instinctive tendencies and acquired inhibitions results in a failure to adapt to the newly created hazardous environment, with a rather precipitous expression of a neurosis resulting. The purpose of this discussion is not to place emphasis on psychopathologic data but to describe some of the failures in effectual adaptation as encountered in flying personnel.

In the flying branches of warfare, man's position early in the flying experience is shown to be precarious, and some form of direct instinctual adaptation is forced upon him by sheer force of circumstances. However much the controlling part of the self is accepted, a continuous strain is present.

The psychologic and psychiatric problems encountered in personnel can best be divided into those seen in (1) the preflight phase of flying training, (2) the flying phase of flight training, (3) reactions from prolonged and continuous flying duty, and (4) the acute emotional disturbances following flying accidents and combat duty.

The nature of the preflight period for pilots can best be used as an illustration for personnel preliminary to flying. It offers tremendous opportunity for psychoneurotic expression. The problems met in the Air Force differ in certain respects from those in the ground forces. Even in peacetime the flying branches are subjected to stress in excess of that normal in the other services.

The training of pilots in the Air Force is divided into preflight, primary, basic and advanced phases. The age of aviation cadets ranges from 18 to 27. A high school education or its equivalent is required. Until recently these cadets were recruited from civilian life or from eligible enlisted army personnel. Prior to the preflight training, all cadets, bombardiers and future navigators pass through a classification center. Here, among other things, an exacting physical examination and psychologic tests, tests in aptitude and psychiatric interviews are given. These interviews are given by aviation medical examiners and flight surgeons, and candidates suspected as not having an adequate adaptability rating for military aeronautics or having a personality unsuitable for flying are referred to trained psychiatrists for final opinion. Spot checking of the men examined and approved by aviation medical examiners or flight surgeons is an added means of detecting potential failures. In general, past histories of nervous disabilities or head injuries, as well as candidates of inferior mentality or psychopathic personality, or those who show such signs of autonomic instability as persistent tachycardia, tremor, labile hypertension or other signs are viewed with suspicion and deferred for non-flying service. Unfortunately this method cannot be wholly efficient. In the first place, no reliance can be placed on the statement of a keen young man with respect to his previous health

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eager to undertake flying training. Furthermore, it is not humanly possible by clinical examination at this time to detect actual or potential neurotics in every instance. As yet the prospective flying candidate has not been placed under the pressure and strain that is to greet him later on, so that during this period many psychoneurotics escape detection.

From the classification center the flying candidate passes on to the preflight school where he becomes a part of a student body numbering many thousands, the equivalent of our largest universities. An intensive program in physical conditioning and a carefully selected academic curriculum are carried out. Discipline is rigid. Upon the basis of appearance, dress, academics and all-round aggressiveness, the candidates are selected to serve as their own officers of Corps, Wings, Groups and Squadrons. These organizations combined are responsible for the discipline and training. The tempo is swift and the pace is unrelenting. Here thousands of men are remolded into firm-muscled, clear thinking and finely disciplined men.

During the period of preflight training all the factors for successful adjustment to group and army life come into play. These do not differ essentially from the period of adjustment that all civilians find themselves making in their basic military training. Individualities no longer exist. The transition from civilian to a regulated, regimented, strictly disciplined activity, however, is very great in this period. Added to this is the intensity of an academic curriculum such that, were the studies continued at the same rate over a period of two years, the work would approximate that of a four-year college course. Every course fits into a complex design which has been tried and tested to fit the rigid requirements of the Army Air Forces. The fear of failing is, therefore, justifiably great in each candidate.

Under conditions such as these, certain types of personality expression and psychiatric deviations consistently appear in group after group of these candidates as they pass through the preflight phase of their flying training.

The first encountered are adjustment problems incidental to first exposure to military or any other strictly regulated life. These include nostalgia, or homesickness, and mild anxieties, commonly seen at the first separation from the home environment, particularly in sheltered youths. Depressing news from home or from hysterical relatives and concern over family or financial matters precipitated by enlistment in the service commonly are factors. There are also the individuals with worries and fears incidental to orientation and organization in the academic program and those having difficulties in acquiring methods of study under unaccustomed physical conditions of living, and adjustment to diet and food selections not of their own choice. Many of these individuals have either left home to escape parental influence or have failed to establish their emotional independence from their parents or parent. Conspicuous at this stage are the fear of failing and the humility of being "washed out"—the common term for being eliminated and disqualified from flying. However, in the main, these problems are of a rather transient nature and do not present particular needs other than intelligent recognition and handling by commanding officers, instructors, fellow students and the psychiatrists.

Another group shows a self-recognized unsuitability or undesirability for the flying branch. Mainly it is made up of individuals who have come into the service without having given it much thought. The glamour of the Air Force, shallow patriotic motives, the appeal of the insignia or other superficial reasons may have been the deciding factor for some in selecting the flying branch. At least they will pointedly confess that they have no desire to complete their training and wish to step out. Undoubtedly many of these men do so also because of a fear of the venture.

Others anticipate early flight training and physically or mentally cannot reconcile themselves to the necessity of subjecting themselves to the rigorous physical training or academic course. Others develop a distaste for the life in the Cadet Corps, with its attendant strict discipline, horseplay and mild "hazing." This may be partial rationalisation or frank admission of their own insight into their lack of adaptability.

Another group make a frank admission of their fear of flying, without displaying any excessive anxieties about it even before

actual flying has begun. They, too, pointedly and bluntly state that they just do not want to fly. Others develop anxiety, tenseness and insomnia, along with an acknowledged fear of flying, and ask to be eliminated.

Another group rationalise their fears of failing or of flying on the basis that they would be able to make more of a contribution in some other branch of military service. Sometimes this process is accompanied by a mixed picture of anxiety and conversion hysteria.

More serious from the standpoint of care and disposition are the typical psychoneurotic and psychotic reactions. These represent the major portion of failures in the preflight group. They do not differ from those seen in civilian life and they fall, likewise, into the familiar subdivisions of:

(1) Anxiety states.
(2) Hysteria.
(3) Neurasthenia or physical invalidism.
(4) Reactive depression.
(5) Psychasthenia.
(6) Major psychotic reactions, especially schizophrenic and manic depressive psychosis.

These conditions embrace a great share of the cases that call for disqualification. Occasionally, anxiety states, with forceful situational factors, lend themselves to a rapid adjustment and return to full duty. Some psychoneuroses, of course, escape detection and are carried on into the actual flying phase of training. They are, however, in the minority during the flying period.

After finishing the preflight training, candidates move on to the schools of flight instruction where they come into contact with their first extensive flying. At this point the majority of instabilities and psychoneurotic reactions have already announced themselves and, although the various reactions observed in preflight training continue to appear they are very few in comparison to their incidence in the preflight phase. The early reactions seen in the flying phase are colored more specifically by the failure of trainees to suppress with success the fear of flying, the hazards of flying, the somatic accompaniments of flying, and the inability to establish a sense of security in the air by failure to adjust to violent swift movements of the human body through space. The effects of change of altitude, acceleration and deceleration, air sickness, vertigo, incoordination, lack of air judgment, tenseness and inability to learn to experience the sensations that go with fundamental flying maneuvers are common. The sensations that go with stalls, spins, dives, rolls, banks, turns and aerial acrobatics flood the nervous system with a deluge of afferent impulses and sensory impacts of terrific volume. The ultimate effect is not always susceptible of objective analysis but there can be no doubt as to the effect on the whole nervous system. The acknowledged and conscious fears of this stage of flying are the fear of loud noises, the fear of falling and the fear of height. The extreme roar of high powered motors subjects some to a constant repression of an instinctive fear or dislike of loud noises. The fear of falling and of height is another source of stress. This is an inherited instinct and has for a background in most individuals a long painful series of experiences. All normal individuals from experience and instinct have some fear of high places and falling. This fear determines to a great extent whether or not flying candidates complete their training. Those who are unable to suppress this fear are very apt to be tense on the controls or at their crew assignment and are never able to fly well. The repression of this fear does not relieve the nervous system of the conscious effort but actually intensifies it. The instinct of self-preservation, as we all know, is fundamental and deep seated and is capable of arousing the most profound emotional disturbance. For that reason, specific fears, for which in reality there is no impressive basis, become pronounced and potent, particularly because of the constant accident hazards.

Adjustment to the somatic accompaniments of flying, such as the sensations of vertigo, the epigastric sensations, the temporary disturbances of vision, and temporary disturbances of consciousness, is either quickly accomplished or not at all.

The psychologic processes and manifestations of conflict, repression, rationalisation and projection are exemplified particularly in preflight training. The psychoneurotic reactions are much more apt to have their symptoms precipitated, the nearer the approach of actual flying training. The psy-

chologic processes in the early flying phases are chiefly those of constant suppression of the hazards of flying and somatic accompaniments of flying. In the early flying phase disqualifications from training on occasions runs very high. Undoubtedly a number of failures in this group are also due to poor or faulty psychologic handling on the part of flight instructors.

Having survived these periods of training by successful repression and suppression, flying personnel enter into the later stages of flight instruction and combat flying essentially physically perfect, with a high degree of intelligence, and externalizing their aggressiveness with ambition, spirit and enthusiasm. The personality make-up with such characteristics fairs best. Later a mature self-composure appears or emotional maturity of a degree develops, and with it the necessary qualities of cool judgment, responsibility and apprehension that make for successful military flying. Reality adjustment becomes deeply a concern of all. In the introverted type of personality, adjustment consists in giving up the ends sought and in substituting for them an imaginary realization. The extrovert has less difficulty in making the adjustment as the action and energy production largely appeal to this type and the extroversion supplies the urge.

In the later stages of flying training and in prolonged duty flying, the physiologic effects on the nervous system are apt to appear. The commonest disturbances observed are those of fatigue, lack of concentration, irritability, minor psychic disturbances, frequently gastric distress, restlessness and insomnia. The principal exciting etiologic factor is emotional stress arising from unsuccessful repression of thoughts provoking emotional reactions. Fear is subconsciously present each time one goes into the air. The effects of such trauma are cumulative and have a distinct bearing on the development of later neurotic manifestations in less resistant individuals. Flying duties embrace all the elements productive of mental fatigue. Boredom in assignments, especially teaching assignments, frequently results in lack of interest and simple depression. Similar symptoms are also seen in individuals returning from lengthy service in the tropics, who are assigned to flight training or routine noncombat flying. Mental lethargy, poor concentration, restlessness, insomnia and alcoholic excesses are common interfering factors in adjustment to active flying training upon return to this country. It may be that in these individuals, constantly exposed to the elements of danger and fears, there is a constant strain and drain upon the sympathetic adrenal fear reflex. Dysfunction of the reflex would seem to rest upon a firm basis of both theoretical probability and confirming fact as a cause for fear and anxiety states when the powers of adaptability to danger are overtaxed.

Lastly are the acute emotional disturbances seen in survivors and witnesses of crashes or battle experiences. Flying personnel may be subject to or witnesses of airplane crashes and battle casualties. As one well knows, crashes and battle produce some of the most violent of known deaths, and to witness the scenes of or survive a crash or battle is never to forget it. Having witnessed or survived and flown again requires one to forget and repress, and thereby new conflicts arise. The emotional damage to which flying personnel are exposed is in this sense a basis for an acute traumatic neurosis. Flying personnel may escape from crashes or battle danger only to be haunted by the memory of those who were mutilated, killed, burned, drowned or lost. Severe nightmares and severe night terrors in individuals not previously subject to them may repeatedly occur and become persistent. Catastrophic dreams recur and the terror persists after awakening. Occasionally a sense of guilt over those lost or killed may be very great. Attacks of restlessness, seeking of companionship, getting drunk, or being subject to hypomanic moods or fits of depression may betray a consistent content of unconscious guilt. In some the various forms of psychoneurotic symptoms appear who may never have shown trends in these directions. There may not always be an immediate reaction to the acute emotional experience, and the complete psychoneurotic picture may not unfold until sometime later on. Latent hypochondriasis may become more overt, and cardiac or gastric neuroses break out or are intensified.

The appearance of nervous symptoms frequently is accompanied by mental depression. In this the patients are disturbed by thoughts of having failed in their duty, of

not having lived up to the standards of courage and valor which they have set for themselves. They frequently express a dread at the idea of returning home to their families with their symptoms and the insinuation of failure. They frequently exhibit a sense of hopelessness and frustration in regard to the future.

When the personality make-up of many of these individuals is analyzed it is obvious that their basic psychoneurotic reactions frequently have nothing to do with the combat experience in itself. Study of the previous personalities discloses the fact that many of these individuals are predisposed to the reactions which they exhibit.

In these individuals it is important that they convalesce emotionally from such experiences just as one does in any personnel on combat duty where one hopes to prevent the accumulation of undischarged tension. Unsympathetic handling frequently creates the danger of fixing the emotional upset into a chronic form and the neurotic symptoms then become difficult to alleviate.

Recent advances in the treatment of acute neuroses in the combat area have introduced a most practical technique in both the rehabilitation of the personality and a tremendous salvaging of military personnel for both continued useful military service and civilian life. As a result, the neuropsychiatric casualties of World War II are being offered far better opportunities for therapeutic success than those of World War I when the neuropsychiatric casualties presented a most serious problem. Progress at this date, in the understanding and therapy of war neuroses based on anxiety, has definitely established the process and the goal of good military psychiatric therapy for the neuropsychiatric casualties of future and remaining battles of this war.

In conclusion, the guiding principle of aviation psychiatry is careful selection of personnel and their maintenance at the peak of efficiency for flight. Such efficiency is impossible for an individual with a marked handicap of psychogenic origin, a loss of stability, or an improper coordination of mind and body. While the circumstances of flying training show no novel or unique psychologic phenomena, they increase the incidence of certain syndromes in a very precipitous fashion. In military flying the fear reflex, by repetition and summation of the stimulus of danger, with constant reinforcement and lack of time for extinction, becomes either highly facilitated or conditioned to wider and wider associations until practically the whole environment becomes an appropriate stimulus to fear and anxiety.

SUMMARY

An attempt has been made to describe briefly the major psychologic reactions and problems observed in flying personnel.

1. The successful completion of preflight training carries with it the necessary adaptability for strictly disciplined group living, plus the successful repression and suppression of the fears incidental to the approaching military flying.

2. The successful completion of the primary flying phase calls for more specific ability to suppress not only the fears of military flying but also the somatic accompaniments of flying.

3. Prolonged and continuous duty flying introduces the physiologic and psychologic factors of constant exposure to the elements of danger and its successful repression with possible overtaxing of the powers of adaptability and resulting disorganization of the nervous system.

4. Individuals in flying accidents, those suffering battle casualties or witnessing flying catastrophes, may suffer an emotional damage comparable to an acute traumatic neurosis.

5. Sound therapeutic principles and techniques have already proven their worth and are offering the casualties of this war a much more hopeful opportunity of rehabilitating the personality in preparation for return to a normal civil life.

Management of the Obese Diabetic—To obtain the goal of a normal weight, complete cooperation of the patient must be present. If the patient refuses to follow instructions only failure will result. Too often the patient is blamed when actually the physician is responsible because of the vagueness of his instructions. It is his duty to explain in detail to the patient what his diagnosis is, what can be accomplished by proper treatment, and what the hazards of not following the prescribed program are. It is equally important to prove to the patient that there is nothing mysterious in his ability to lose weight. It is only a balance between caloric intake and caloric output. —*Hamff, J. M. A. Georgia, Sept.* '44.

RENAL COMPLICATIONS OF SULFONAMIDE THERAPY

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The recent increase in the use of sulfonamide drugs has shown very few complications from their use. They are employed almost universally for all infections, and it is surprising that they have not caused side effects of greater or less severity. The most commonly reported complications have been agranulocytosis, neutropenia, cutaneous manifestations and renal complications. Since the introduction of the later sulfonamides there have been fewer of the anemias and rashes and more renal involvement, due primarily to the fact that sulfanilamide, when excreted in the urine, is very soluble, while the later compounds, sulfapyridine, thiazole, diazine and merazine are fairly insoluble when excreted because of their acetylated forms. Sulfanilamide being the first of the sulfonamide drugs to be utilized by the medical profession, and very soluble in the excreted form, little interest was manifested in or work done upon its renal effects. However, following introduction of the latter drugs, it became evident that crystallization appeared rather frequently, and that certain symptoms developed following administration of these compounds which could not be attributed to the disease itself. Of the sulfonamide drugs, sulfanilamide apparently causes the least renal damage, following which, in order, are sulfathiazole, sulfadiazine and sulfapyridine. (To date, sulfamerazine has not been sufficiently reported.)

I would like to report nine cases of renal complications following sulfonamide therapy, all of which were thought to be a result of medication and not of the original condition present. They consist of six cases following sulfadiazine therapy; two, sulfathiazole; and one, sulfapyridine. This percentage does not follow the reported cases, and, unfortunately, I do not have record of the total number of patients in which sulfonamide therapy was used. However, sulfathiazole and sulfadiazine were used much more frequently than sulfapyridine. They consist of the following:

SULFADIAZINE		
Pneumonia		3
Infarct	1	
Lobar	2	
Influenza		2
Virus pneumonia		1
SULFATHIAZOLE		
Otitis media		1
Ruptured appendix		1
SULFAPYRIDINE		
Lobar pneumonia		1

Read before the Association in annual session, Montgomery, April 18, 1944.

REPORT OF CASES

Case No. 1. G. Q., male, age 39, was seen in the home 12/25/43 complaining of severe pleuritic pain on the right side. On 12/14/43 he had had a ligation of the long saphenous vein in the right leg with injection of 10 cc. of sodium morrhuate into the distal portion of the vein. This was done in an army hospital and he was at home on sick leave at this time. The following day consolidation was found in the base of the right lung and he was sent to the hospital. Sulfadiazine therapy was begun, 6 gms. being given the first two days; then 4 gms. daily. Blood count was 12,500. Urine was negative upon admission. On 1/3/44 he complained of severe pain in the left kidney region and voided bloody urine. X-ray was negative for stone. Sulfadiazine blood level was 6 mgs. per 100 cc. Urinalysis showed 2 plus albumin, numerous crystals and loaded with red blood cells. The daily output averaged 650 cc. A cystoscopy was carried out and the kidney pelvis was lavaged with sterile water. The catheter was left in place for two hours and 2000 cc. of 5% glucose were given intravenously. At the same time sodium bicarbonate, grams 2, was given orally every four hours and the sulfadiazine discontinued. He had no further pain and the urinary findings disappeared. On 1/8/44 he complained of severe pain in the left chest and it was found that another infarct pneumonia had developed in the left base. The white blood count which had dropped to 8500 was found to be 17,500. Sulfadiazine was resumed again in 6 gm. dosage daily. The temperature rose to 104 and the pulse to 140. Because of nausea, alkali therapy was not instituted. Two days later left kidney pain again developed with gross hematuria. Sulfadiazine blood level was 6.8 mg. per 100 cc. Output 1050 cc. Cystoscopy was again carried out. Pelvis lavaged this time with sodium bicarbonate solution and catheter removed. The patient had no further renal involvement and proceeded to an uneventful recovery.

Case No. 2. B. S., white female, age 26. Admitted 12/8/43 with a diagnosis of left lobar pneumonia, type IV. Temperature 104, pulse 110, white blood count 22,000. Catheterized specimen of urine negative. Sulfadiazine was given in 6 gm. doses daily. On 12/11/43 complained of

acute backache, and urine showed gross blood. Output averaged 840 cc. daily. Sulfadiazine blood level 9.4. X-ray for stone was reported negative. Sodium bicarbonate, 15 grains (1 gm.), given every four hours and 2000 cc. of 5% glucose given intravenously. Total intake 12/12/43 was 4500 cc. Output 1100 cc. with a few blood cells in urine. Backache continued for three days, but as urinary findings cleared up, sulfadiazine medication was continued because of patient's general condition (4 gms. daily). Temperature and pulse returned to normal on the eighth day and no further urinary symptoms developed.

Case No. 3. A. N., colored female, age 18. Admitted 2/4/44 with pneumonia of the right base, not typed. White blood count 14,650. Catheterized specimen of urine negative. Sulfadiazine, grams 1, given every four hours with forced fluids up to 3000 cc. daily. On 2/6/44 the patient complained of dysuria and frequency. This was thought to be due to fluid intake and specimen was not examined. The next day gross blood appeared with many crystals and numerous pus cells in the catheterized specimen. X-ray showed no evidence of calculus. The sulfadiazine blood level was not determined. The drug was discontinued and sodium bicarbonate, grains 30 (2 gms.), was given three times a day. The urinary symptoms promptly disappeared and the temperature returned to normal on 2/9/44.

Case No. 4. M. P., white male, age 34, was seen in the home on 2/14/44 complaining of sore throat, cough and malaise. Temperature 102; pulse 110, nothing in chest; throat red and inflamed. A diagnosis of influenza was made and he was given sulfadiazine, gms. 1, t. i. d. (primarily to ward off pneumonia), codeine and aspirin. For two days the temperature fluctuated from 101 to 98 with gradual decrease in cough and chest pain. On 2/17/44 he was allowed to be up and around the house. That afternoon he began to pass bloody urine and noticed numerous small orange yellow crystals on the glans penis. Sulfadiazine was discontinued, and because sodium bicarbonate had always had a marked laxative effect, according to the history, a combination of alkali salts was given (Citracarbonate-Upjohn). The following day all urinary symptoms had disappeared, except for mild dysuria. Three days later, 2/21/44, because of the bloody urine passed during illness, although all chest symptoms had also disappeared, patient requested x-ray for urinary calculus. This was found negative. Still not satisfied, he further requested a complete check-up. Cystoscopy was then carried out, bilateral pyelograms and renal function tests, all of which were normal. He has had regular urinalyses since that time, all of which have been reported negative.

Case No. 5. W. B. A., white female, age 24, was seen in the home 3/9/44 with a complaint of cough, fever and sore throat. Temperature 101, pulse 100, throat was found red with a few white patches on the tonsils. Diagnosis of influenza with mild follicular tonsillitis. Sulfadiazine, grams 1, four times a day, was prescribed with local treatment to throat. Because of recent experience, sodium bicarbonate was suggested, grains 30 t. i. d. Patient was not seen again until 3/14/44 (five days after onset). At this time she was suffering with acute right kidney pain, dysuria and slight hematuria. It was found that because of nausea she had omitted taking the sodium bicarbonate as suggested. This was begun, together with forced fluids (3000 cc. per 24 hours), and the sulfadiazine discontinued. Urinalysis showed 1 plus albumen, 3 plus acetone, loaded with pus cells and 3 plus red blood cells. Output was not measured but was said to be scanty. The pain in the right side moderated the third day but was present in mild degree for three consecutive days. Urinalysis on 3/17/44 was negative, except for a few pus cells.

Case No. 6. W. M. B., age 17, white male, admitted to hospital 12/14/43 with diagnosis of pneumonia of the left lung, duration one week. Temperature 104, pulse 130. He had received approximately 30 grams of sulfathiazole since onset. X-ray revealed consolidation of the left lower lobe. Typing was unsatisfactory showing mixed organisms. White blood count was 10,800. Patient was given 5 grams of sodium sulfadiazine in 100 cc. of distilled water intravenously on admission and 2 grams orally thereafter every four hours. Continuous glucose (5% in saline) was begun on admission. Temperature and pulse remained elevated for four days with no apparent improvement in patient's condition. Another x-ray check-up was reported as a virus pneumonia on the left side. On 12/19/43 patient suddenly complained of acute pain in the back and voided 300 cc. of almost pure blood. X-ray showed no evidence of renal calculus. White blood count 8,600; temperature 102; pulse 130. Urinalysis showed 2 plus albumin; 2 plus acetone, many hyaline and granular casts; many sulfadiazine crystals, and loaded with red blood cells and pus. Sulfadiazine was discontinued and mixed alkalies were given by mouth. Urinary output on 12/19/43 was 800 cc.; on 12/20/43 450 cc. Sulfadiazine blood level 4.2 per 100 cc. of blood. The daily fluid intake averaged 3500 cc. On the following day (12/21/43) all backache had disappeared, and there were few red blood cells in urine and no crystals to be seen. The patient remained in a critical condition for about ten days, but showed no further evidence of renal involvement. Sulfonamides were considered to be of no avail and were not administered.

Case No. 7. A. R., white female, age 11, admitted to the hosptial 3/10/44 with a diagnosis of acute otitis media; duration one day. Temperature 105; pulse 140. Sulfathiazole, grams 1, given orally every four hours. On 3/12/44 tenotomy was done, following which temperature dropped to 99, pulse 110. The same day dysuria and slight hematuria occurred. Urinalysis showed many sulfathiazole crystals, many red blood cells, many pus cells, with one plus albumin. All medication was discontinued and patient had no further trouble.

Case No. 8. R. B., white male, age 18, admitted to the hospital 2/9/44 with a diagnosis of acute appendicitis. He was operated on at 2:30 A. M. The appendix was found ruptured with a general peritonitis present. Eight (8) gms. of

sulfathiazole powder were placed within the abdomen and the wound was closed with a small drain. Continuous 5% glucose and saline intravenously (4000 cc. per 24 hours) and the Wagensteen nasal suction were begun. This treatment was continued for two days; then sulfathiazole, gms. 6 daily, was begun and continued for four days. The sulfonamide blood level on 12/14/43 was 8.2 mg. per 100 cc. On the same day he complained of a severe backache and a pain in the left kidney region radiating forward. Urinalysis showed many crystals and four plus red blood cells. The drug was discontinued and alkali therapy was instituted. Cystoscopy was considered but patient passed 16 ounces (480 cc.) of urine which was fairly clear of blood and this procedure was delayed. His general condition being entirely satisfactory surgically, the drug was not readministered during his illness. Although he developed a fistula which necessitated a secondary closure, he had no further urinary complications.

Case No. 9. E. P., age 54, white male, admitted to the hospital 1/20/44. Diagnosis right middle lobar pneumonia. Roentgenogram verified the diagnosis. White blood count 26,500, temperature 103, pulse 112. Voided specimen of urine negative except for a few pus cells and two plus albumin. Was given intranasal oxygen and sulfapyridine, gms. 3, for the initial dose and then 1½ grams every four hours. About 18 hours after admission he voided bloody urine and complained of severe backache. The sulfonamide blood level was 2.6. Urinalysis showed gross blood loaded with pus and numerous arrowhead-shaped crystals. The urinary output for the first 24 hours in the hospital was only 180 cc.; for the second 24 hours, 240 cc. The drug was discontinued for 24 hours; then sulfamerazine was administered, 4 grams daily. Intravenous glucose, 3000 cc. daily, was begun and on 1/24/44 urinary output had risen to 1100 cc. The sulfamerazine was continued for three days, during which time there was no renal pain, and, with exception of 1 plus albumin and many pus cells, the urine cleared up.

SUMMARY

This is a rather small series of cases to report but it does serve to illustrate the fact that, although the sulfonamide drugs are remarkably free of complications, they do occur and should be considered whenever these drugs are administered. There have been several reported fatalities following sulfonamide therapy. Leutscher and Blackman[1] report two cases of death after sulfathiazole therapy ascribed by them to injury to the brain. Numerous other authorities—Rottino and LaRotunda,[2] Hellwig and Reed,[3] Finland, Peterson and Goodwin,[4] and Jeck and Orkin,[5] to mention some of them, have reported fatal cases following sulfonamide therapy, but, considering the almost universal use of this group of drugs, the fatalities are very rare and the complications few.

The cases reported were considered to be urinary complications upon the following criteria: there was either pain in a kidney or both kidneys, crystalluria, hematuria or pyelitis of undetermined origin associated with microscopic blood cells, and crystals in the urine. The most common finding in this group of cases was crystalluria and macro- or microscopic blood cells. Kidney pain was variable, occurring in six cases. Roentgenograms taken failed to show evidence of renal calculus or evidence of crystals within the kidney substance. There was dysuria in all cases, and in one case (No. 4) crystals were found upon the penis. (Wright and Kinsey[6] reported the same finding.) The amount of sulfonamide administered varied from two to six grams daily, and the blood level was maintained between 2.5 and 9.4 milligrams per 100 cc. in those cases examined. The urinary output varied from 180 to 2000 cc. per day.

It will be noted that, unfortunately, all of these cases have not been reported with complete work-ups; however, they appear to be such clear-cut examples of renal involvement that they are included within this series. Case No. 1 showed a rather high blood level during the entire illness, and his urinary output was adequate. It will be noted that upon the second ureteral catheterization sodium bicarbonate solution was used with better results than distilled water. Case No. 2 illustrates the fact that it is not always necessary to discontinue the drug upon the

1. Leutscher, J. A., Jr., and Blackman, S. S., Jr.: Severe Injury to Kidneys and Brain Following Sulfathiazole Administration, Ann. Int. Med. 18: 741 (May) 1943.

2. Rottino, Antonio, and LaRotunda, Oswald: A Fatal Case of Urolithiasis Medicamentosa Caused by Sulfadiazine, J. Urol. 48: 310 (Sept.) 1942.

3. Hellwig, C. A., and Reed, H. L.: Fatal Anuria Following Sulfadiazine Therapy, J. A. M. A. 119: 701 (June 27) 1942.

4. Finland, Maxwell; Peterson, O. L., and Goodwin, R. A., Jr.: Sulfadiazine, Ann. Int. Med. 17: 920 (Dec.) 1942.

5. Jeck, H. S., and Orkin, Lazarus: Toxic Renal Reactions Following the Use of Sulfadiazine, J. Urol. 49: 290 (Feb.) 1943.

6. Wright, Maj. D. O., and Kinsey, Maj. R. E.: Renal Complications Due to Sulfadiazine, J. A. M. A. 120: 1351 (Dec. 26) 1943.

occurrence of a renal episode since alkali therapy was sufficient to relieve the complication. This case also had a very high sulfadiazine blood level, but apparently the height of the blood level is not proportionate to the occurrence of the crystals. In other words, a high blood level does not necessarily indicate a subsequent kidney complication. Cases 3, 4 and 5, frankly, should probably not be included in this series, since laboratory and clinical data were somewhat inadequate; however, they appeared to be of the same type of renal involvement and are thus included. Case No. 6 serves primarily to illustrate the well known fact that sulfonamide therapy is of little benefit in the treatment of the virus type of pneumonia. It should be noted that in Case 9 sulfamerazine was substituted for sulfapyridine without further renal disturbance. It is not suggested, however, that the latter drug is entirely free from renal danger, as sufficient information has not yet been reported in the literature to justify such an assertion.

DISCUSSION OF RENAL EFFECTS OF THE SULFONAMIDES

SULFANILAMIDE

As is well known, cyanosis is the most frequent side effect of sulfanilamide. It has been suggested by Long and Bliss[7] that the white blood count should not drop below 4500. Because of the fact that both free sulfanilamide and acetyl sulfanilamide are very soluble, slight renal damage occurs from the administration of this drug. I have found no reported cases of hematuria, crystalluria or other kidney involvement in the literature.

SULFATHIAZOLE

The excreted form of this drug, which is usually the acetyl derivative, is less soluble than that of the former drug and is thus more apt to crystallize within the kidney tubules. It is important to realize that as this drug is excreted a concentration of 10 mgs. per 100 cc. in the blood may be increased to 300 mgs. per 100 cc. in the urine as a result of the reabsorption of water by the tubules of the kidney. It is easily understood, therefore, that crystallization can occur within the kidney parenchyma, and these crystals can readily enter the kidney where obstruction has been known to take place. Schwartz et al.[8] have reported a case of renal blockage following this occurrence.

SULFADIAZINE

Although many authorities[9, 10, 11] have reported the greater percentage of renal complications following the use of sulfapyridine, this small series of cases apparently shows that sulfadiazine causes more renal side effects than any one of the sulfonamides. Although the incidence of toxic reaction in general is lower than with the other commonly employed sulfonamide drugs (with the possible exception of sulfamerazine), renal involvement occurs with sufficient frequency to demand particular attention. Several fatalities have been reported from the use of this drug. Hellwig and Reed,[3] Finland, Peterson and Goodwin,[4] Raines,[12] and Jeck and Orkin[5] are among others who have witnessed this unfortunate occurrence. Wright and Kinsey[6] report 38 cases in which there were seven incidences of hematuria following sulfadiazine therapy. Louria and Solomon[13] report in detail a case of anuria following its administration. (They further report that only five other cases are recorded in the literature, to date, although numerous cases of partial blockage are on record.) They, among other investigators, believe that the kidney lesions produced by this drug are caused mechanically by crystal formation; others however are of the opinion that the drug has a nephrotoxic action apart from the damage produced by crystallization. Hellwig and Reed[3] believe that this effect is similar to that seen in bicholoride of mercury poisoning. It is generally accepted, however, that the damage is primarily that of kidney irritation caused by the crystallization of the excreted form of

7. Long, Perrin, and Bliss, E. A.: The Clinical and Experimental Use of Sulfanilamide and Allied Compounds, ed. 1, New York, The Macmillan Company, 1939.

8. Schwartz, Leon; Flippin, H. F.; Reinhold, J. G., and Domm, A. H.: The Effect of Alkali on Crystalluria from Sulfathiazole and Sulfadiazine, J. A. M. A. 117: 514 (May) 1941.

9. Lancet 1: 74 (Jan. 16) 1943.

10. M. J. Australia 1: 253 (March) 1943.

11. Roy, J.: Army Med. Corps 80: 42 (Jan.) 1943.

12. Raines, S. L.: Ureteral Obstruction Following the Use of Sulfadiazine, J. A. M. A. 119: 496 (June 6) 1942.

13. Louria, A. L., and Solomon, Charles: Complete Anuria Caused by Sulfadiazine, J. A. M. A. 120: 1354 (Dec. 26) 1942.

the drug. Gilligan et al.[11] report one case in which they found crystals of free sulfadiazine.

SULFAPYRIDINE

This drug is the least soluble in urine and is the most common sulfonamide causing hematuria and crystallization. The usual method of preventing renal irritation, i. e., alkalization, is apparently ineffective because the solubility of the drug itself and its acetyl derivative is apparently not affected appreciably by changes in the pH of the urine. This member of the group, however, has been found to be particularly effective in the treatment of pneumonia and is rarely used for any other infectious disease. Consequently, the percentage of cases showing renal involvement has not been too large because of the relative infrequency of its use as compared with sulfathiazole and sulfadiazine. Anuria following sulfapyridine therapy seems to be a fairly frequently reported finding,[9, 15, 16, 17, 18, 19, 20] and hematuria with oliguria has been occasionally seen.[10]

SULFAMERAZINE

This being the latest of the sulfonamide compounds in general use, there is practically no information in the literature regarding its renal toxicity. In my experience and in the experience of my coworkers, there have been no incidences of renal irritation. It is apparently the most satisfactory and safest of the sulfonamide compounds which have been developed up until now. In my opinion the intravenous route is the most desirable and I have seen no side effects of any kind develop from its use.

COMMENT

It is generally conceded by all investigators and clinical workers that alkalization of the urine will, in most cases, prevent the formation of crystals in the urine, except in the case of sulfapyridine, the acetylated salt of which is practically insoluble. It has been found that at neutrality (pH 7.0) sulfadiazine is approximately seven times and acetyl sulfadiazine thirteen times more soluble than at pH 5.0. Gilligan et al.[14] report that in patients treated with adjuvant alkali therapy renal complications are much less severe in the ratio of 30% to 5%. They report that among 350 patients treated with 6 gms. orally of sulfadiazine, together with appropriate alkali therapy, none developed crystalluria or evidence of kidney irritation attributable to the use of the drug.

The precipitation of crystals in the kidney is conditioned by the volume of urine and the chemical factors that influence solubility of the drug. The volume of the urine can be kept large by appropriately increasing the fluid intake, either by forcing fluids by mouth or giving them parenterally. Other factors influencing the solubility of the sulfonamides and their acetyl derivatives can, for practical purposes, be reduced to two, the acidity (pH) of the urine and its urea content. Urea exerts a solvent action on many organic substances, and it has been shown to have this effect on sulfonamides and their acetyl derivatives. The urea content of the urine can be increased by feeding urea by mouth. The increase in the solvent power of the urine that it is feasible to get by feeding urea is not very great. A much more practical way of preventing crystallization is by alkalization of the urine. Sulfathiazole, sulfadiazine and their acetyl derivatives are much more soluble in an alkaline than an acid urine. For example, the quantity of sulfadiazine that can be held in solution is increased tenfold by an increase in the pH of the urine from 6.5 to 7.5.

The volume of the urine is very important to prevent crystallization. It is advisable to keep the daily fluid intake between 4,000 and 5,000 cc. and the output between 1000 and 1500 cc. The pH should be kept at neutrality or above. In some cases it is very difficult to do this as the drug itself causes an acidity of urine, and sodium bicarbonate by mouth is not possible at all times. The suggested dose of sodium bicarbonate, when possible, is 15.6 gms. daily, divided into 6 doses of 2.6 gms. (40 grs.) administered every four hours. In those cases which will not tolerate the bicarbonate the administration of mixed alkalies containing potassium

14. Gilligan, Dorothy; Garb, Solomon; Wheeler, Charles, and Plummer, Maj. Norman: Adjuvant Alkali Therapy in Prevention of Renal Complications from Sulfadiazine, J. A. M. A. 122: 1153 (Aug.) 1943.
15. Lancet 1: 646 (May 22) 1943.
16. Lancet 1: 647 (May 22) 1943.
17. Lancet 1: 648 (May 22) 1943.
18. Brit. Med. J. 2: 11 (July 3) 1943.
19. Lancet 2: 359 (Sept. 26) 1942.
20. Ohio State M. J. 38: 929 (Oct.) 1942.

salts, of which there are many on the market, serve to maintain an alkalization of the urine which is entirely adequate. When necessary, the intravenous use of sodium lactate solution will usually render the urine alkaline.

It is readily evident from this report that the ideal way to prevent any type of renal complication is to use adjuvant alkaline therapy in all cases in which the sulfonamides are administered. This is certainly true, and were it feasible, practical and possible it would be advisable. Certain patients, however, do not tolerate alkali medication well and the comparative rarity of complications does not seem to indicate routine alkali medication in all cases, except possibly those in which a minimum of 4 gms. of the drug are given per day.

CONCLUSIONS

1. Complications of sulfonamide therapy are remarkably few, and consist mainly of blood dyscrasias, cutaneous manifestations and renal complications.

2. Nine cases of renal involvement are reported which were considered to be due to sulfonamide therapy.

3. There were no fatalities and no evidence to date of permanent renal damage following the administration of these drugs.

4. Alkalization of the urine with adequate urinary output is apparently the only treatment necessary. Withdrawal of the drug is advisable but does not seem essential.

5. The drug most commonly causing kidney symptoms is considered to be sulfapyridine because of the insolubility of its acetyl derivatives. However, in this group of cases, sulfadiazine was found to be the main offender, probably because of its more extensive use.

6. The renal damage caused by the sulfonamides is probably due both to mechanical blockage of the tubules and pelves by crystallization of the drug and to a nephrotoxic action exerted on the kidney itself.

RABIES

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DEFINITION

Rabies is a natural virus disease of dogs and related animals, such as the wolf, fox and coyote. The virus attacks the brain and produces insanity and paralysis. Man and all warm-blooded animals are susceptible to the disease. Rabies is always fatal once it develops.

SEASONAL PREVALENCE

Rabies is most common in the late winter and the spring, contrary to the popular opinion that the disease is practically limited to the "dog days" of the fall. Outbreaks of rabies may develop at any season of the year and in any climate. The reason for the high prevalence in the spring is that stray dogs range the country at this time in search of food and mate.

The studies and observations on which this paper are based were conducted with the support and under the auspices of the International Health Division of The Rockefeller Foundation and the Alabama State Board of Health.

METHOD OF INFECTION

The virus is often present in the saliva of rabid animals, and the disease is therefore most commonly transmitted by a bite. The virus cannot get through the normal skin but can enter the body if infected saliva gets into a fresh scratch or wound.

RABIES IN DOGS

A normal dog that is bitten by a rabid animal may develop rabies in as short a time as ten days, or it may show no symptoms until several months later. In most instances rabies will develop from twenty-one to sixty days after exposure. The virus is not present in the saliva until the early symptoms of the disease appear.

Rabies in dogs is usually classified as furious or dumb depending upon the symptoms shown by the animal.

Furious Rabies—During the early stage of the disease the dog may appear quite normal and be even more affectionate than usual. Despite its friendly actions the dog will be

easily irritated, especially if restrained in any way. If picked up it will immediately try to break away, and if not promptly freed will bite savagely. This is usually the way children are bitten, because they will pick up the friendly looking dog and try to hold it when it attempts to get away. Other early symptoms shown by the dog are restlessness and excitement. It will seldom lie still for more than a moment and will snap at flies and chase chickens, cats, and domestic animals. It also has a tendency to eat sticks, straw, earth, and other indigestible material. After a period of one to three days the dog may become extremely vicious and bite any living thing that gets in its way. The eyes are glazed and constantly wide open. There is often weakness of the voice resulting in a peculiar howl-like bark. During this stage the dog will usually wander away from home, roam the countryside, and attack any person or animal it sees. Within a few days paralysis will develop, first shown by a wobbly or staggering walk and paralysis of the jaw. Paralysis then extends until the animal cannot get up. This is the course of the typical furious form of rabies. Dogs with this type of the disease usually live several days and may live as long as ten days after developing symptoms.

Dumb Rabies—In this type of the disease the early symptoms consist of sleepiness and melancholia, and the dog will try to hide or get away by itself. These symptoms are soon followed by paralysis of the jaw, throat, voice, and leg muscles. There is no irritability or tendency to bite, but persons may be exposed to rabies by trying to look at the throat or give medicine. Animals so affected seldom live more than three days after developing symptoms.

The majority of rabid dogs show symptoms of both types of the disease; that is, a period of restlessness, excitement, and irritability during which they appear friendly and unusually alert, rapidly progressing to paralysis of the dumb rabies type.

Dogs and other animals suffering from rabies are without fear. Rabid wild animals, such as foxes and skunks, will fearlessly invade farm premises and attack persons, dogs, and domestic animals. The disease makes them insensible to pain, and blows or gunshot will not frighten them. *A rabid animal will scarcely ever attack a person that stands completely still.*

HOW TO PREVENT RABIES

As rabies is spread almost entirely by dogs it is possible to eradicate the disease completely. This has been accomplished in some countries by a strict quarantine for all dogs, continued for a period of several months after the last reported case of rabies. All stray dogs are impounded and destroyed.

It is a well-known fact that rabies occurs in proportion to the number of stray dogs in the community. This does not necessarily mean ownerless dogs, but includes all dogs which roam the street and countryside. Dogs tend to congregate in groups and, should one of the animals be infected, cases of rabies may develop for a perid of months thereafter. *Children should be instructed to avoid all stray dogs when rabies is present in the community.*

It has been conclusively shown that a single injection of rabies vaccine will afford a high degree of protection to a dog. Therefore all dogs should be vaccinated. This is especially important to prevent the exposure of children and adults by their own dogs. Rabies vaccine, however, is not 100 per cent effective, and vaccinated dogs if bitten by a rabid animal may possibly develop the disease. The vaccines now in use contain no live virus, so there is no danger of the dogs' developing rabies from the vaccine. Dogs under nine months of age are difficult to immunize. They are also more susceptible to the disease than older dogs. It is therefore best to vaccinate a dog when he is six months old and again when he reaches one year of age. The immunity produced by vaccination is not permanent but probably persists for at least one year.

REGULATIONS FOR THE CONTROL OF RABIES IN ALABAMA

The Alabama Dog Control Act for combating rabies was adopted by the Legislature in 1937. This law requires all dog owners who do not constantly keep their animals confined or on leash when out of the kennel to have them vaccinated once a year against rabies. The law also provides for the impounding of stray unvaccinated dogs, penalties for not having dogs vaccinated, and confinement of biting dogs and animals suspected of having rabies. Rabies inspectors

are appointed annually by each County Board of Health and have full police power to enforce the act.

Wherever the cooperation of the public has been obtained in enforcing this regulation, dog rabies has completely or almost entirely disappeared. Each citizen should, for his own safety and that of his family, his dogs, and his domestic animals, regard it as his duty to report stray dogs and to see that they are impounded and that owned dogs allowed freedom are vaccinated. When rabies is present in the community, every dog owner should keep his dogs from roaming the streets and countryside, for his own protection as well as that of other persons.

WHAT TO DO IF BITTEN BY A DOG

If rabies is present in the community every biting dog must be suspected of having rabies. The wound produced by a dog bite or scratch should be *immediately* washed thoroughly with soap and water and bleeding encouraged. This will remove most of the infected saliva if the dog has rabies. Immediately after this first cleaning of the wound a doctor should be consulted as to whether further local treatment is needed and whether the vaccine treatment should be given.

Any dog that has bitten a person should be locked up either on its owner's premises or in a veterinary hospital for a period of fourteen days. If the animal has rabies it usually will die in a few days, and will assuredly die of the disease within a two-week period. If rabies is present in the community a veterinarian should be consulted as to whether the dog had rabies. If the biting dog is a stray the rabies inspector or a veterinarian should be called, so that the dog can be caught and held for observation. Even if the biting dog appears to have rabies, it should *not* be killed unless this is absolutely necessary. During the early stages of the disease it is often impossible to make a diagnosis of rabies by examining the brain of the animal. But if the dog is allowed to die of the disease microscopic examination of the brain will usually show quickly whether or not the animal had rabies.

LOCAL AND VACCINE TREATMENT FOR PERSONS EXPOSED TO RABIES

If a person has been bitten by an animal and the veterinarian and the physician feel that the animal had or probably had rabies, the wound produced by the bite should be cauterized with nitric acid or some equally efficient substance. Such treatment must be given by a physician.

Because it usually takes several weeks for rabies to develop in man, it is possible to prevent the disease by vaccination after exposure. The usual treatment consists of fourteen daily injections of vaccine. It is advisable to begin the treatment promptly, at least within the first few days after exposure. In rare instances the vaccine fails to prevent the disease.

Vaccine treatment should be started immediately when:

1. The animal was apprehended and presented clinical signs of rabies.
2. The animal was killed and the brain found positive for rabies by microscopic examination.
3. The animal was killed and, though the brain was negative, the animal was suspected of being rabid.
4. The person was exposed by a stray animal which escaped, and where rabies is known to be present in the community.

The vaccine treatment is also recommended for persons who have handled animals diagnosed as rabid by clinical or laboratory means and when fresh abrasions of the skin were contaminated by the saliva of the infected animal.

It must be emphasized that when an animal is apprehended after attacking a person and rabies is suspected, it should not be killed but should be confined under the supervision of a veterinarian. If the animal has rabies it will usually die within two or three days. This is important, as the immediate laboratory diagnosis of rabies depends on the demonstration of specific inclusion bodies in the brain of the animal, and these are often absent in the early stages of the disease.

HOW TO OBTAIN A LABORATORY EXAMINATION OF THE HEAD OF AN ANIMAL THAT IS THOUGHT TO BE RABID

If a dog that has bitten someone dies or is killed it is important that the head should not be mutilated in any way. A positive diagnosis of rabies can usually be made by microscopic examination of the brain. If this examination is negative the diagnosis depends on the inoculation of brain material

into mice. If the animal had rabies the virus is always present in the brain and will reproduce the disease in mice.

Animal heads that are to be sent to the State Health Department for examination should be removed by a veterinarian or someone especially familiar with the nature of rabies. The operator should wear rubber gloves, and the instruments and gloves which he uses should afterward be disinfected by boiling. The animal's head should be put in a water-tight container and this should be put in a larger tin container in which equal parts of sawdust and ice have been placed. The container should be labelled "Rush—Rabies Suspect" and dispatched to the nearest laboratory of the State Health Department.

UTERINE HEMORRHAGE IN PREGNANCY AND THE PUERPERIUM

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A few years ago the three chief causes of maternal deaths were septicemia, toxemia and hemorrhage, in the order named. Modern antiseptics and techniques have changed these figures so that now the same three causes remain but they are reversed in order, hemorrhage being first; toxemia, second; and septicemia, third. It is because of this fact that I wish to direct attention to what is now the most common cause of maternal death in parturient women—hemorrhage.

The most common source of hemorrhage is the placental site, the bleeding occurring either antepartum or postpartum. Postpartum bleeding always occurs, being physiologic. It is only when the bleeding is profuse that it becomes a source of alarm. The profuse type occurs as a result of the failure of the uterine sinuses to close. This may be occasioned by haste on the part of the accoucher, leading him to too early delivery of the placenta. In such procedure the placenta is separated before adequate contraction of the uterine musculature occurs. The bleeding in such a case may become alarming. Hemorrhage from this cause can be prevented by allowing adequate time for the uterus to contract.

Bleeding from the placental site is favored by antepartum overdistension of the uterus. Overdistension may result from a very large fetus or polyhydramnion. When such a condition exists, extra care in delivery of the placenta is demanded. As a rule, traction on the cord should never be resorted to because this has a tendency to open lacunae or even to evert the organ. It is usually a good routine to give 1 cc. of ergotrate intravenously just before the baby is completely delivered, or immediately thereafter. This is particularly advisable in a uterus that is overdistended from any cause.

Hasty or rough handling of the cervix in a search for cervical tears may also open up lacunae and lead to hemorrhage. Consequently, any attempt at such investigation should be done with the utmost gentleness.

If hemorrhage that cannot be controlled by the usual manipulation occurs, the uterus should be tamponed, using the most aseptic technique possible. Five yards of gauze should be packed into the uterine cavity, exercising care to pack both cornua and then to fill the entire uterine cavity. If necessary, attach another five yards to the first and then tampon both vaginal fornices and the vaginal tract. Such a pack should be removed in six to eight hours lest ascending infection be induced. Only gentle pressure and massage should be used in removing the placenta after adequate time has been allowed for recovery of uterine tone and placental separation.

The most serious of the hemorrhages that occurs from the placenta are, as a rule, antepartum and result from abruptio placentae or placenta praevia. Placental separation may be complete or partial. Complete separation always justifies section, for such a procedure offers the best chance of saving the mother and it may save the child. Ability of diagnosis and decision for prompt termination of labor here are essential. The diagnosis is suggested by sudden onset of abdominal pain, with a firm, tender uterus.

Such a condition demands immediate hospitalization and prompt, thorough investigation. At this stage there may be no visible blood, but careful laboratory and physical examination should make a diagnosis possible. If the attendant is reasonably certain of partial separation, the decision to deliver from below may be wise in some cases; but section is probably the safer in order to save mother and child in all but the exceptional cases. However, rupture of the membranes may enable uterine contractions through the fetal body to exert such pressure upon the placenta as to prevent further separation or bleeding. If the membranes are ruptured, more than evacuating the forewater must be accomplished. This is done by lifting the presenting part so as to permit drainage of the amniotic fluid above the baby's body.

If the os is not dilated adequately for rupture of the membranes, if the cervix is long and rigid, or, usually, if the patient is a primipara, section, in the writer's judgment, is the proper procedure. If the separation has been complete or extensive, or the state of the patient weakened, in any of a number of ways, section should always be done.

When the uterus has been opened, hysterectomy may be demanded. This is indicated by dark discoloration of the uterine musculature, failure of the uterus to contract, or areas of evident necrosis. Petechial areas in the fundus or broad ligament should warrant suspicion. If pressure produces blanching with prompt return of color after removing the pressure, the chances of saving the uterus are good. If there is apparent absence or impairment of muscle tone or vascularity, a test may be made by introducing into the uterine cavity hot packs which should be left *in situ* for five to ten minutes. If tone and vascularity are restored, it may be possible to save the uterus. This failing, hysterectomy should also be done.

Hemorrhage from placenta praevia suggests two methods of procedure. The first duty of the attendant in suspected placenta praevia is to make a careful aseptic and antiseptic examination, including shaving the parts, to confirm the diagnosis and to determine the type of anomaly. This can only be done by vaginal examination. If placenta marginalis is found, the membranes should be ruptured which will allow the presenting part to descend and, by pressure, control the bleeding from the placental area. If placenta partialis is found, the same procedure is warranted, provided the membranes can be ruptured. However, if placenta totalis is found, cesarean section is the only wise course in order to offer the best chances of survival to both mother and fetus.

Bleeding above normal amount requires good judgment, prompt decision, and immediate action; and offers a real test of the judgment, ability and skill of the attending physician.

The Doctor and Socialized Medicine—Today, organized medicine is beset upon many fronts by evils which seek to disrupt all that is good and worth while in the practice of medicine. As we observe the radical forces which seek to force a place for themselves in our social make-up, it seems amazing and incredible that such influences should find nourishment in our American soil of free enterprise and individual industry. It is a unique and characteristic result of even minor social revolutions that they become progressively aggressive and increasingly demanding—and we of the medical profession had best look to our knitting and defend the character and principles of medical practice with all the power at our disposal. . . .

Some doctors are represented to be untroubled by these invasions into the field of medicine for they are independently wealthy and are devoid of the aims and the ideals of the healing art—they are doctors by medical school decree, but that only— they possess neither the character nor the principle, the sympathy or the understanding of the true physician and his relationship with the sick, the needy and the maimed—some there are who are reported to have linked their abilities with political possibilities and will be on the ground floor, no matter what may happen—others are possessed of that innate quality which renders them deaf, dumb and blind to all except the immediate problems of teaching and research. If political medicine becomes a reality these gentlemen will find no incentive either for teaching or for research—but to offset these, we have in our ranks the priests of medicine, the bearers of the standard, those upon whom the caduceus is indelibly stamped, the self-sacrificing, the faithful and the loyal; such a diversity of temperament and opinion is possible only because of the democratic nature of medical organization. In the present emergency, however, petty differences and small jealousies must be laid aside in the interest of united action, not only for the preservation of the present system, but, indeed, for the welfare of the entire nation.—*Metz, New Orleans M. & S. J., October* 1944.

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DIVERTICULITIS OF THE COLON

"Diverticulums of the large bowel were noted by Friend as early as 1730, but. . . . little attention was paid to the condition until W. J. Mayo in 1907 described resection of the sigmoid in 5 cases of chronic obstructive diverticulitis. The value of the roentgen ray as an aid in diagnosis was not fully appreciated in this country until 1915. Since then there has been a gradual evolution in the technic of handling these cases—from radicalism to conservatism. The disease is of relatively common occurrence, errors in diagnosis are not infrequent, and both the morbidity and mortality are altogether too high.

"The incidence of diverticulosis of the colon—a prerequisite of diverticulitis—has been estimated at 3 to 10 per cent." These are the opening sentences of the article by Young and Young[1] dealing with this difficult subject. The authors go on to tell us that "it is difficult to obtain significant figures on the percentage of cases of diverticulosis progressing to diverticulitis." And they cite various figures from different investigators ranging from 12 to 34 per cent.

1. Young, Edward L., and Young, Edward L. III: Diverticulitis of the Colon, New England J. Med. 230: 33 (Jan. 13) 1944.

Diverticulitis, we are told, is primarily a disease of adult life, being by no means uncommon in the fourth decade but reaching its peak in the fifth and sixth decades. And the congenital type of diverticulum is so rare that but little consideration is given to it. The etiology of the acquired type is unknown.

The Boston clinicians hold that "diverticulitis is a disease of protean manifestations and diagnosis is often difficult. Even the differentiation of diverticulosis and diverticulitis is not always obvious." The sigmoidoscope is helpful and "the barium enema is the most accurate diagnostic procedure."

"As with any disease, the best treatment is prophylaxis. Following a diagnosis of diverticulosis, measures should be instituted to avoid the factors known to predispose to diverticulitis, such as overdistention of the bowel, hard, coarse fecal material, degenerative changes and obesity. A low-roughage diet and sufficient mineral oil or other bland laxative to promote regular, soft-formed movements eliminate the usual mechanical factors. Tincture of belladonna to relieve spasm is always beneficial. All irritative cathartics are contraindicated, especially strong saline solutions since their prolonged use leads to hypertonicity of the rectal sphincter. All efforts should be aimed at cultivation of regular bowel habits."

"With the onset of diverticulitis, further steps are in order—a temporary soft diet to rest the inflamed sigmoid, bed rest, local heat and antispasmodics. There are several methods of applying heat locally—hot stupes to the abdomen, the Elliott method and warm colonic irrigations. Roberts and Friedenwald mention the use of large barium enemas in both subsiding and acute diverticulitis."

The Youngs inform us that "about 22 per cent of cases come to surgery, but indications for surgical intervention are still unsettled and the trend in therapy is toward conservatism. There seem to be five general indications for surgery: acute perforation with spreading peritonitis, sigmoidal obstruction, formation of a fistula, a localized abscess, and inability to differentiate diverticulitis and cancer."

The Boston clinicians have done well to bring this subject to our attention and their article, though brief, is well done and highly

informative. They reviewed the literature and presented a series of 84 cases of their own also. Though the gastroenterologists may always have the possibility of diverticulitis in mind, it is probable that the average practitioner, either medical or surgical, thinks of such an entity all too infrequently and consequently makes an incorrect diagnosis all too often. For, beyond all doubt, diverticulosis and diverticulitis are either increasing in incidence or are being diagnosed more often than formerly. At any rate, it is a condition that must be faced and the profession must be on the alert so that these cases can be recognized early instead of late. And all physicians who treat gastrointestinal disturbances will do well to bear in mind the conclusion reached by the Youngs: "Certain facts stand out as important: blood in the stool was found in 26 per cent of the cases where no cause other than the diverticulitis was found; the incidence of this condition was much higher in this series than in others, which suggests that in a true cross section of disease as seen by the general practitioner the condition should be oftener recognized and treated; conservative treatment, especially the use of x-ray barium either by mouth or where possible by rectum, gives a high percentage of relief; and when surgery is needed the simplest procedure possible gives the lowest mortality."

STATE DEPARTMENT OF HEALTH

BUREAU OF ADMINISTRATION

B. F. Austin, M. D.
State Health Officer

SUPERSTITIONS AND HEALTH

Some time ago an aged man in one of Alabama's neighbor states was haled into court on a fire-setting charge. He promptly admitted that he had set the fire but told the judge he had done so to rid the community of appendicitis. He went on to say that "them forestry fellers" had prevented people from setting forest fires and, as a result, the "bugs" which "roosted" in the trees and caused appendicitis had got the upper hand. So, he said, he had started a fire to get rid of the "bugs" and prevent his friends and neighbors from having that disease.

"He is only one of many superstitious oldsters who believe that wood-burning will destroy bugs and beetles, 'green up the woods,' drive game, or, in the spring cause rain," wrote an Associated Press correspondent from the State capital.

Unfortunately, superstition-ridden people are not confined to those that writer mentioned. They are found in Alabama as well as in all other parts of the world. And, while they impede the march of progress in many fields, their superstitious tales make particularly difficult the work of promoting individual and public health.

In a recent address the State Health Officer discussed the fantastic ideas many people have regarding the prevention and cure of that universal malady, the all too common cold. "Like certain other diseases," he said, "the common cold has been the subject of many legends and Old Wives' tales. Indeed few forms of illness have inspired more advice from well-meaning but medically uninformed friends, relatives and ordinary acquaintances than this one. One classic bit of advice was to 'get under the bed when you know a cold is coming,' because, according to those advice-givers, 'you fool the chill by not being in bed when it expects to catch you there.' This gem of medical wisdom makes about as much sense as the admonition to throw all your money into the river to keep from being robbed."

Another superstition, or false belief, regarding the common cold mentioned at that time had to do with the supposed danger of contracting a cold by "sitting in cold, damp churches." The person who gave it support was one Dr. Thomas Haynes, presumably a physician. There was, in the learned doctor's time, as in ours, a measure of truth in it, of course, since dampness, combined with a lack of heat, makes one more susceptible to colds. What he failed to point out, however, is that there is no more danger to potential cold victims in cold, damp churches than there is in other buildings

that are cold and damp. As was pointed out in that address, "whenever you hear a person give this as his reason for not going to church, the chances are that he is more interested in staying away from church than in staying away from colds." Actually, the average person is much better protected from colds in a house of worship than he is in his own home, because the average church is better heated than the average residence.

School children and other users of the famous Webster's dictionary may be surprised to learn that the wise old Noah Webster, who compiled the first of the famous volumes published under that name, gave considerable prevalence to a fallacy regarding colds. This form of illness, he declared, was due to comets and earthquakes. How so learned a man could spawn such an obvious misconception is a cause of amazement. For it required little reasoning on his part, or on the part of anyone else, to see that this theory had no relation whatsoever to truth, since millions living during Dr. Webster's lifetime, to say nothing about billions who died before his time, had had any number of colds without ever having seen a comet.

Unfortunately, there are as many wild ideas about the cause and cure of other diseases as there are about colds.

There are still many persons, for example, who think that tuberculosis is inherited and predict an early death from this disease for anyone whose mother or father had it. This idea was exploded many years ago by tuberculosis specialists, who demonstrated conclusively that tuberculosis is transmitted from the sick to the well by germs and that it is necessary to receive these germs into the body before one can contract it. It is easy to see how the idea of inheritance got a foothold of course. Both the ignorant and the well informed knew several members of the same family who had contracted tuberculosis after one or more of their parents had had it and jumped to the conclusion that one inherited the disease. What they failed to understand, however, is that parents and their children usually live in close and intimate association with each other, especially when children are young, and that this association affords an excellent and continuing opportunity for one person's tuberculosis germs to be transmitted to others. As proof that tuberculosis is not inherited, medical men have taken any number of young babies from their mothers soon after they were born and kept them away, giving them good, nourishing food and causing them to live generally in an atmosphere conducive to good health. And those babies remained free from tuberculosis. On the other hand, there are any number of cases of tuberculosis which have been contracted from persons not at all related to the new victims—fellow-workers in a factory, store or office, fellow-users of the same dishes and drinking glasses, and supposed victims of "bad colds" and "bronchitis" who took no precautions to protect others whenever they coughed or expectorated.

Another misconception regarding tuberculosis which is still widely prevalent, in spite of efforts to dissipate it, has to do with the danger of contracting this form of illness. Being caused by germs, it is of course a communicable disease and proper precautions should be taken against it. But casual association with persons having it is not anything like as dangerous as many people think, especially if tuberculosis patients exercise the proper precautions. It is absurd and silly for an adult to be afraid to visit a person having it. It is equally absurd and silly, and also extremely inconsiderate, to treat a recently discharged sanatorium patient, or a person who has recently completed treatment at home, as a leper or dangerous germ incubator. Physicians will not permit their tuberculosis patients to resume association with well people until they have been made safe from this point of view, either by the completeness of their recovery from the disease or by education. Remember it is the undiscovered case of tuberculosis that offers the greatest danger, not the person who is known to have had it.

Another misconception regarding tuberculosis is that "once tuberculous always tuberculous." The truth is that in every field of endeavor there are people of all ages who are doing their full share of the world's work and enjoying better health than many who do not have tuberculosis histories. There is, therefore, every reason to free the mass mind of whatever may remain of the old idea that a diagnosis of tuberculosis is a sentence to permanent semi-invalidism, economic dependency and relative uselessness

to oneself and to others. For, fortunately, there is no more basis for such a belief than there is for a belief in the curative powers of witchcraft.

The venereal diseases likewise are a fruitful ground for misconception and misapprehension. That is one of the chief reasons why that field has been cultivated so assiduously by quacks.

For hundreds of years these diseases have been associated in the lay mind with immorality. Millions of people regard them as punishment for infractions of the moral code. The truth is that syphilis, gonorrhea and the other venereal diseases are no more a punishment for such infractions than is a case of pneumonia or a skull fracture resulting from an automobile wreck. Admittedly, a large number of cases of these diseases are the result of sexual promiscuity. But others are contracted innocently, while still other cases are inherited from syphilitic mothers. In a single recent year, the latest for which complete vital statistics reports are available, no fewer than 90 syphilis deaths were reported from this State among babies less than one year of age, while 98 were reported among children less than five years of age. Certainly, these deaths, and also many others constantly occurring in Alabama and elsewhere, could not be ascribed to those youthful victims' breaching of the moral law.

What the public health agencies and the medical profession are trying to inculcate in the public mind is that the venereal diseases are transmitted by germs and may be contracted in much the same way as tuberculosis, a bad cold or influenza. This campaign of education is making progress, although it is necessarily slow. Much of the headway that has been made in recent years in bringing the venereal diseases under control is believed to be due to this changing conception of the nature of these diseases and a willingness on the part of a growing proportion of our people to discuss the venereal disease problem openly and frankly. The day of silence and hush-hush as far as they are concerned is past. They are being attacked, like other forms of illness, in the bright sunlight of truth and honesty.

If you ask the average person what he considers the best remedy for snakebite, he will probably reply "whiskey." Hunters and trappers for generations have carried flasks with them whenever they would go into the swamps and other places where they were likely to encounter poisonous reptiles. But that is just another medical Old Wives' tale and has undoubtedly caused the loss of many lives. For whiskey is not only not beneficial for snakebite but is actually about the worst thing that one can take into his system at such a time, as it stimulates the heart action and spreads the poison to other parts of the body. Taking a big swig of whiskey for snakebite is about as unwise as taking a laxative for appendicitis.

These are only a few of the false and misleading ideas regarding health and disease which are still rather widely prevalent in spite of years of effort to dissipate them. Many others could be named if space permitted. It is hoped that lay readers will bring their medical knowledge up to date by asking themselves whether what they think on these subjects is based upon sound medical knowledge and experience or is only the result of what well intentioned but medically uninformed friends and relatives have told them. Remember that doing the wrong thing may be as dangerous as doing nothing in a time of emergency, when a physician may not be available. As part of its effort to keep Alabamians informed in such matters, the State Department of Health has made available booklets and pamphlets on many subjects, and these may be had for the asking.

BUREAU OF MATERNAL AND CHILD HEALTH

J. S. Hough, M. D., Acting Director

THE ROLE OF THE PHYSICIAN IN THE DEVELOPMENT OF ORAL HEALTH

Contributed by
Polly Ayers, D. D. S.
Division of Dental Hygiene

The efforts which a child's obstetrician and, subsequently, his pediatrician have made to provide him with a healthy masticatory apparatus are reflected to a marked degree in his oral state at the time of his initial visit to the dental office. Since the dentist has little control over his future patients until after the developmental period of the teeth has been under way for several years, he must depend upon the members of the

medical profession to assume the responsibility for encouraging those practices which are believed to be conducive to the formation and maintenance of sound tooth structure, well-shaped arches, and healthy supporting tissues. Such practices include the following of an approved dietary regimen, the refraining from mouth habits which are believed to distort the dental arches, and the brushing of the teeth in an approved manner.

For the past quarter of a century investigations have been conducted at the Forsyth Dental Infirmary in Boston to determine the relationship between nutrition and oral health. There it has been possible to reduce the incidence of new decayed areas in patients with rampant caries by improving the daily food intake. The workers feel that a diet which will meet the requirements for producing a healthy body will also be the optimum diet for developing and maintaining healthy teeth and gums. One of the many interesting studies done at this institution was the one which showed that, in a large group of clinic patients chosen at random, those who had been breast-fed even for only a short period had fewer carious surfaces in their deciduous teeth than did those children who had been entirely formula-fed. Animal experimentation carried on jointly by the Forsyth Dental Infirmary and Harvard University has shown that vitamins A, C, and D, plus calcium and phosphorus in adequate amounts, are the food stuffs of greatest importance for oral health. However, it must not be forgotten that these substances alone cannot be depended upon to provide all the dietary essentials, and, unless the total nutritional requirements are met, we cannot expect individuals to realize the best of health.

Since we in the dental profession have little opportunity to give dental information to young patients and their parents until the children are two or three years of age, the dental health of these youngsters prior to that time must be guarded by their physicians. The success with which the dentist can bring his child patients to adulthood in an ideal dental state will depend largely upon the material with which he has to work. If the obstetrician and pediatrician give adequate consideration to the teeth during their prenatal and postnatal developmental periods, there is much reason to believe that the arches will be better formed and the teeth will be more resistant to decay.

In addition to prescribing a food intake which will aid in the development of sound bodies as well as sound teeth, the physician is in a position to assist in the prevention of mouth habits which are frequently responsible for the misshaping of the jaws and the malalignment of individual teeth. Such habits as thumb-sucking, mouth-breathing, lip-biting, and tongue-thrusting are among the very common causes of malocclusion. Thinking only of the psychiatric problems which may be involved, many physicians have hesitated to attempt any drastic methods for stopping these habits. If, however, several years later, these gentlemen were given the opportunity to view models of the dental arches of children who have been allowed to continue such habits, they would realize the source from whence have come many of the patients who fill the waiting rooms of the men in orthodontic practice. For the sake of our mutual patients it would seem that a joint effort on the part of physicians, psychiatrists, and dentists might be indicated as a means of solving our common problem of maintaining shapely dental arches without interfering with a child's mental stability.

The physician also has an opportunity to advocate a proper system of tooth-brushing soon after the eruption of the first tooth. Although dentists no longer feel that they can state with no reservations that "a clean tooth never decays," the majority of them are of the opinion that proper cleansing of the teeth is advantageous. It is generally agreed for instance that a clean mouth feels and tastes better and is free from odor. It is likewise thought that brushing tends to improve the tone of the gingivae through stimulation and by preventing the formation of calcareous deposits. Studies have been made to determine the period of maximum acid concentration in the saliva and investigators have shown that within the first fifteen minutes, following the eating of food, saliva reaches its greatest state of acidity. Those, therefore, who believe that the lactobacillus acidophilus organism is responsible for decay are prone to advocate the immediate cleansing of the teeth following every

meal. Since the etiology of dental caries is still an unsolved problem, we are not able to promise marked lowering in the incidence of decay to those who follow the above plan, but we do feel that such a procedure may be of some value and that it is certainly worth further research.

In summary, then, we may say that the dental profession must delegate to the medical profession the task of developing within their child patients teeth, gums and dental arches which will be in an optimum state at the time the oral health of these children becomes a responsibility of the dental profession. With this cooperation your dental colleagues will be able to come nearer their goal of preserving teeth throughout their periods of usefulness. This is an aim which neither group working alone can hope to achieve.

BUREAU OF SANITATION

T. H. Milford, M. S. in S. E., Director

SURVEY OF SWIMMING POOLS IN ALABAMA

Contributed by

J. P. Gilbert
Sr. Pub. Health Engineer

A state-wide survey of swimming pools and bathing places in Alabama, now in progress, is being undertaken to gather and pass on to County Health Departments and pool owners information and suggestions regarding the various types, construction and layout, appurtenances and operational procedures. At this time the State does not have regulations governing the construction and operation of swimming pools. The bulletin entitled Report of the Joint Committee on Bathing Places, 1937, is recommended by the Bureau of Sanitation, as applied to the construction and operation of swimming pools in Alabama.

At such time as the justification for the need of regulations is shown, the relative importance of this type of program in relation to other programs ascertained, and sufficient personnel and funds to carry on such a program are made available, it is expected that steps may be taken to bring swimming pools under the sanitary control of the State Department of Health.

Since swimming pool water constitutes a medium by which certain pathogenic organisms may be transferred directly from bather to bather, the need for strict observance of sanitary standards at swimming pools is apparent. It is reported by medical authorities that such diseases as diarrhea, dysentery, typhoid and paratyphoid fever, coryza, diphtheria and scarlet fever may be transmitted by swimming pool water; also that the water may serve as a transmission agency for the causative agents of conjunctivitis, ear infections, and infections of the skin and subcutaneous tissues. Fungus infection of the feet is frequently transmitted by direct contact in swimming pool bath houses. Diving or swimming may cause injury of the ear or sinus tissues with subsequent infections by the existing organisms.

In connection with the survey several different types of swimming pools have been observed. The majority of the pools encountered are of the fill and draw type where cleanliness of the water is dependent upon the complete removal and replacement of the water at periodic intervals. A number of flowing-through pools have been seen also. Cleanliness of the constant flow pool is dependent upon the proper circulation of a sufficient quantity of water through the pool, discharging to waste. Some of the pools seen are a combination of the two types. Indoor and outdoor recirculating pools visited on the survey are located mainly in the larger cities and at state colleges. Circulation of the water through this type pool is maintained by pumps, the water drawn from the pool being clarified by filtration and usually chlorinated before being returned.

Among the most important features in connection with swimming pool sanitation, there might be listed the design and construction of the swimming pool, the nature and purity of the water supply, the design, construction and equipment of the bath house, and the operation of the swimming pool and appurtenances.

A few of the pools seen have been improperly constructed with wood walls, some having sloping walls, and a number with concrete walls and sand bottoms. The majority of the pools are rectangular in shape with average water depths of 1½ feet in the shallow ends and about eight feet in the deep ends. It is important that swimming

pools be constructed of material that will provide an easily cleaned surface and to be of such dimensions as to provide sufficient area and capacity to serve the number of bathers that may be expected at the time of maximum use.

Only water from a safe supply (as from a protected well, spring, or clean stream that is shown to be free from sources of sewage pollution) should be used as a water supply. Where water is used from a stream or impoundage it may be necessary to treat the water properly, employing coagulation and filtration to remove any turbidity and bacteria that might be present. It is recommended that the water be chlorinated regardless of its source and be piped directly to the pool.

In constant flow pools, to obtain proper circulation of the water through the pool, a number of inlets should be used and uniformly spaced. At many pools of this type seen the water is admitted to the pool usually through one inlet and often in one corner of the pool.

It is important that water from a potable supply be admitted to the swimming pool above the operating water level in the pool or in such manner as to avoid the possibility of the pool water gaining access to the potable supply because of leaking valves or suddenly lowered pressures. A number of cross-connections have been encountered at swimming pools visited on the survey.

Properly spaced and protected drainage outlets at the deepest point of the pool should be provided to permit the pool to be drained in four hours or less. All pool drains to sewers should be broken at a point where any sewage which may back up from the sewer will overflow to waste instead of being permitted to reach the pool.

It has been noted that many of the swimming pools being surveyed are constructed without overflow gutters. Properly designed gutters extending completely around the pool and provided with drainage outlets every ten feet are necessary to receive the overflow, scum, and floating matter.

Properly drained concrete runways constructed around the pool, with the pool area enclosed with a suitable fence, should be provided to prevent walk drainage and tracking of dirt and grass into the pool. This feature is lacking at many of the swimming pools seen.

The majority of the swimming pools are not provided with adequate and properly equipped bath house facilities. Swimming pool sanitation is dependent upon properly designed and constructed bath houses provided with adequate showers for cleansing baths, toilets, lavatories, and footbaths with disinfectant solution. Drinking water facilities should also be provided with potable water supplied from an approved source.

The operation of swimming pools to maintain safe swimming water is dependent upon the above factors in addition to proper control methods connected with the frequency of changing the pool water, frequency of cleaning operations, and disinfection practice. As an added safeguard in swimming pool sanitation, it is recommended that an adequate chlorine residual be maintained at all times that pools are in use. Bacteriologic analysis of samples of the water from swimming pools will indicate the effectiveness of the various control methods.

BUREAU OF PREVENTABLE DISEASES

D. G. Gill, M. D., Director

PREVALENCE OF COMMUNICABLE DISEASES IN ALABAMA

1944

	July	August	E. E.* August
Typhoid	27	18	67
Typhus	155	144	70
Malaria	547	321	1017
Smallpox	0	1	0
Measles	56	14	29
Scarlet fever	20	41	45
Whooping cough	153	60	104
Diphtheria	20	56	57
Influenza	52	24	47
Mumps	87	58	28
Poliomyelitis	34	24	10
Encephalitis	1	1	1
Chickenpox	9	2	5
Tetanus	8	4	4
Tuberculosis	261	266	255
Pellagra	7	6	22
Meningitis	22	23	5
Pneumonia	159	136	82
Trachoma	0	0	0
Tularemia	2	0	1
Undulant fever	18	2	7
Dengue	0	0	0
Amebic dysentery	51	6	0
Cancer	313	194	0
Rabies—Human cases	0	0	0
Positive animal heads	0	2	

As reported by physicians and including deaths not reported as cases.

*E. E.—The estimated expectancy represents the median incidence of the past nine years.

BUREAU OF VITAL STATISTICS

Ethel R. Hawley, Acting Director

PROVISIONAL MORTALITY STATISTICS

REPORTED BIRTHS, STILLBIRTHS, DEATHS FROM CERTAIN IMPORTANT CAUSES AND RATES*— ALABAMA JULY 1944, 1943, 1942

Births, Stillbirths, and Causes of Death	Number of Deaths Registered—July 1944			Rate (Annual Basis)		
	White	Colored	Total	1944	1943	1942
Births, exclusive of stillbirths	**	**	6728	28.5	26.8	23.0
Stillbirths	**	**	191	27.6	32.6	32.5
Deaths, exclusive of stillbirths	1263	922	2185	9.2	9.3	8.8
Infant deaths, under one year	166	127	293	43.5	48.2	55.3
Under one month	105	70	175	26.0	29.8	30.6
Typhoid and paratyphoid, 1, 2	1	2	3	1.3	1.7	
Epidemic cerebrospinal meningitis 6	4		4	1.7	2.5	0.8
Scarlet fever 8						
Whooping cough 9	1	7	8	3.4	8.4	3.2
Diphtheria 10	1	1	2	0.8	0.4	0.4
Tuberculosis, all forms 13-22	29	56	85	36.0	48.2	45.1
Malaria 28	3	2	5	2.1	3.8	5.3
Syphilis 30	11	22	33	14.0	13.5	15.8
Influenza 33	7	4	11	4.6	3.8	2.8
Measles 35	1	2	3	1.3	0.4	0.4
Poliomyelitis 36		1	1	0.4	0.4	1.2
Encephalitis 37	1		1	0.4		1.2
Typhus fever 39	6		6	2.5	0.4	1.2
Cancer, all forms 45-55	133	45	178	75.4	68.0	65.9
Diabetes mellitus 61	16	7	23	9.7	13.9	9.8
Pellagra 69	6	1	7	3.0	3.0	6.1
Alcoholism77					0.8	
Intracranial lesions 83	126	92	218	92.3	74.8	76.8
Diseases of the heart 90-95	297	162	459	194.4	169.4	147.6
Diseases of the arteries 96-99	18	9	27	11.4	9.7	11.8
Bronchitis 106	5		5	2.1	2.1	
Pneumonia, all forms 107-109	49	33	82	34.7	35.9	30.1
Diarrhea and enteritis (under two) 119	35	22	57	24.1	20.7	25.6
Diarrhea and enteritis (two and over) 120	6	7	13	5.5	7.6	6.9
Appendicitis 121	11	8	19	8.0	10.6	6.5
Hernia, intestinal obstruction 122	9	8	17	7.2	7.6	6.5
Cirrhosis of the liver 124	2	6	8	3.4	4.6	2.8
Nephritis, all forms 130-132	79	72	151	64.0	70.1	78.5
Diseases of the puerperal state 140-150	17	14	31	44.8	36.6	56.4
Puerperal septicemia 140, 142a, 147	3	4	7	10.1	12.2	15.4
Suicide 163-164	14	2	16	6.8	5.1	4.5
Homicide 165-168	8	20	28	11.8	9.7	17.5
Accidental deaths (exclusive of motor vehicle) 169, 171-195	85	43	128	54.2	55.3	50.0
Motor vehicle 170	31	8	39	16.5	17.3	21.1
All other known causes	207	132	339	143.6	169.8	147.6
Ill defined and unknown causes 199-200	44	134	178	75.4	78.6	75.2

**Not available.

*Birth and death rates per 1,000 population; infant death rate per 1,000 live births; stillbirths per 1,000 total births (inclusive of stillbirths); from specific causes per 100,000 population; from puerperal causes, per 10,000 total births.

The Decline of Appendicitis Mortality in Virginia—The reduction in mortality from appendicitis during the past twenty years has been outstanding. The number of deaths from this cause in Virginia has been cut almost in half during the period—from 239 deaths in 1924 to 134 for the past year. The greater part of this reduction, however, has come about in the past seven years. For the period 1924 to 1937, a slight reduction only was noted, from a rate of 10.1 per 100,000 population to 8.5. Following the year 1937, the decline was accelerated until in 1943 a new low rate of 4.7 was established.

Appendicitis mortality among colored persons is higher than among white. In the past year in the State, the colored rate (7.6) per 100,000 population was exactly twice the white rate of 3.8. Although substantial reductions have been made for this cause among the colored race during the past two decades, improvement has been less pronounced than in the white. The colored rate (10.8) in 1924 fell to 7.6 in 1943, a decline of 30 per cent. The white rate decreased from 9.9 in 1924 to 3.8 in 1943, a reduction of 62 per cent.

Among males the death rate from appendicitis is larger than among females. Last year in Virginia there were 82 male deaths, with a rate of 5.7 per 100,000, and 52 female deaths, with a rate of 3.7.

All ages are represented in mortality from this cause, although maximum rates are found past 45 years of age. In 1943 the death rate in the State for the age span 45 years and over was 8.4 per 100,000 population. The age period 20 to 44 years was next in order, with a rate of 4.0. Among young children and adolescents smaller rates were noted, as follows: under five years, a rate of 3.8; five to nine years, 2.2; and ten to nineteen years, 3.4. A feature of particular interest is the steep downward trend of mortality *among children and young adults* during the past two decades. The greatest gains against this disease have been between the ages of 5 and 44 years. Death rates for this age span showed a reduction of 58 per cent during the period. The decline among older persons was less marked—a 36 per cent decrease. For children under 5 years there was an actual rise in death rate from 2.1 for the year 1924 to 4.9 for the year 1937. However, between the years 1937 and 1943 (the period of significant decline among all ages) there was a 22 per cent reduction for this age group, with a rate, in 1943, of 3.8.

Undoubtedly, the rate decrease in deaths from appendicitis among adolescents and adults represents a real improvement in mortality. The less spectacular decline among very young children may be due, in large part to more accurate diagnosis at the present time, as intestinal disturbances so frequent among this age group may have formerly obscured the diagnosis of appendicitis. The intensive educational campaign to inform the public of the danger of delay in seeking medical advice, and to warn against the use of laxatives for abdominal pain have brought about a large reduction in the number of complicated cases with resultant lowered mortality.—*Riggin, Virginia M. Monthly, October '44.*

BOOK ABSTRACTS AND REVIEWS

Health Instruction Yearbook, 1944. Compiled by Oliver E. Byrd, Ed. Dr., Associate Professor of Hygiene, and Director, Division of Health Education, School of Health, Stanford University. Foreword by C. Morley Sellery, M. D., President, American School Health Association. Cloth. Price, $3.00. Pp. 354. Stanford University: The Stanford University Press, 1944.

Several months ago the present reviewer, presenting a discussion of Professor Oliver E. Byrd's Health Instruction Yearbook, 1943, took occasion to express the hope that it would prove the first of a series appearing at yearly intervals and bringing to health workers and the interested public the latest fruits of the author's wide reading in the health field. The recent publication of Health Instruction Yearbook gives substance to that hope.

The 1944 edition is essentially similar to its 1943 prototype, although naturally its subject matter is altogether different. In its preparation the author diligently read no fewer than 1,347 articles appearing in public health, medical and near-medical journals, as well as such unpublished material as mimeographed radio talks. Approximately one item out of every four read was chosen for inclusion in this work, usually in condensed form.

As in the earlier volume, the material is assembled under a number of general heads and every article or summary of an article is grouped with kindred material. Each of the twenty chapters contains an introductory statement by the author, which serves as a cohesive agent, giving a sense of unity to its different and somewhat differing parts. There is an excellent bibliography, showing the source of all material quoted or summarized. This material is also properly indexed by subjects and authors.

The subjects covered range far and wide in the health field, from Health As a Social Accomplishment and Excretion and Health to Heredity and Eugenics and Habit-Forming Substances. Among the others caught in Professor Byrd's vigorously wielded net are Nutrition and Health, Fatigue and Rest, Chronic and Degenerative Disorders, Health Services and Facilities, Family Health, School Health, and Fatigue and Rest.

Like the 1943 edition, this one contains a summary of a radio talk in the weekly series heard through Montgomery's Station WSFA under the sponsorship of the Alabama State Department of Health. The more recent one was entitled Visiting the Sick and was delivered June 14, 1944.

J. M. Gibson.

Fundamentals of Psychiatry. By Edward A. Strecker, M. D., Sc. D., F. A. C. P., Professor of Psychiatry and Chairman of the Department, Undergraduate School of Medicine, University of Pennsylvania; Psychiatrist to the Pennsylvania Hospital; Attending Psychiatrist, Psychopathic Division, Philadelphia General Hospital. Second edition. Cloth. Price, $3.00. Pp. 219 with glossary and 15 illustrations. Philadelphia: J. B. Lippincott Company, 1944.

This small text is a basic foundation for fuller understanding of psychiatry. It is a book well planned and well written. The book reflects a true primer style of teaching a subject which is intoxicated with its own perplexities. In retrospection we will wonder why this book is not used as a beginner's textbook in psychiatry instead of using the staggering system presented in medical colleges which is often so confusing that the taste for psychiatry is embittered in its infancy. This book describes in brief all of the common psychoses and explains methods of treatment for them. The various psychoses are introduced by discussion of their etiology which is divided into organic, toxic and functional. There is a valuable discussion of the method of approach for a successful psychiatric examination and formulation of the material gained therefrom. In the discussion of the organic psychoses there is an excellent presentation of general paresis. In the toxic psychoses alcoholic manifestations are well covered. The discussion of the functional psychoses is a masterpiece in simplifying a difficult subject. As in all recent medical works the aspects of the repercussions of war on the human mind are dwelt upon rather freely. There is a definite place in every practitioner's library for a book of this type.

Philip K. Burwell.

Burns—It should be a matter of justifiable pride to all Americans that many of the cardinal steps in the present understanding of burn management has been the result of research and work done by Americans. Whether in the understanding of shock or in our present enlightened attitude in the local treatment of burn itself, American physicians have pioneered. In the management of burns as in other serious conditions which confront physicians, the ultimate truth is usually simple. Such is true in the physiologic management of burns.—*Williams, J. Missouri M. A. Oct. '44.*

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SURGERY IN THE AGED

WALTER F. SCOTT, M. D.
Birmingham, Alabama

The aim of this paper is to plead the case of the elderly patient, who, needing surgery for relief and comfort, is often denied treatment because he or she is thought to be too old or the risk too great.

During the past eight decades, life expectancy in the United States has increased 20 years. In 1865, at the end of the War Between the States, only 50 per cent of our population reached the age of 40 years, while, in 1931, according to Brooks, the average age of the white male was 59 years and the white female 62 years. In a population of 122,000,000 in 1931, 6.6 per cent (or 8,805,200) were over 65 years of age. If this rate of increase is maintained and projected over the next 80 years, there will be by that time about 28,000,000 people in this country over 65 years of age.

With these figures before us, it can be readily agreed that there is now an increasing percentage of our population needing and desiring intelligent medical care. For this, in our opinion, the medical profession, through its wider distribution of medical care, is partly responsible. In accepting the credit for this increased longevity, we, the doctors, must also accept the enormous obligation of intelligently and honestly serving these aged individuals. It is certain that the aged will never appeal to physicians as children do; they are often temperamental, they are less apt to recover, and their relatives, unfortunately, seem less interested. Nonetheless, a moderate amount of attention and care will oftentimes produce startling results and usually unbounded gratitude.

Read before the Southeastern Division of the Association, Union Springs, October 25, 1944.

This is a responsibility which rests squarely on the medical profession, although a majority of its members seem unaware of it. Too often a needed operation is postponed until finally, to prevent further suffering and prolong life, it is advised. It is then more or less an emergency affair. When one realizes that the life expectancy of a person aged 70 is nine years; of 75, seven years; of 80, five years; and 85, four years, it can be easily agreed that the remaining few years should be spent, if possible, in comfort and peace. Elderly people, in our experience, stand elective surgery remarkably well, and, if given proper preoperative and postoperative attention, the mortality will be very little higher than in earlier decades of life.

It is true there is more generalized pathology in an elderly person than a younger one, such as hypertension and lack of muscle tone, aside from coronary thrombosis, hemiplegia and other complications that cannot be averted and which occur as often in the preoperative as in the postoperative stage. Formidable operations may be performed as safely on elderly persons as on those in middle age with comparable lesions. The aged stand well any elective surgery which they believe will prevent further suffering or prolong life. In our experience, when convinced of just that, they welcome it. They do not stand well prolonged or multiple-stage procedures. In the latter they are apt to become weary and depressed, and are prone to give up. The nicety of surgical judgment as to when, what and how much to do is the keynote to surgical success in these patients. However, of equal if not of more importance is the pre- and postopera-

tive care. No matter how keen the surgery or the surgical judgment, if not attended by proper care before and after operation all will be lost. We know of no type of surgery which requires more careful and skillful handling, both prior to and after operation. It requires ingenuity, patience, endurance, optimism and tact.

Preoperative care should aim to get the patient in the best possible physical condition without too severely interfering with his usual mode of life. This latter we feel is of the utmost importance. If he smokes, chews, dips snuff, takes a daily toddy, or has any other personal habits that in themselves are not injurious, we let him continue them. He will be happier and more contented than being regimented. In other words, allow the patient to live as normal a life as is consistent with improvement.

The first consideration to us is his renal function, the next his cardiac condition, and the third the pulmonary apparatus. Compensated valvular defects are no bar to operation, but a fatty or fibrotic myocardium is a serious obstacle, and must be boosted by proper cardiac stimulants. In our line of work, renal function is of the utmost importance. A low kidney function is a bar to surgery. It is much safer, in our opinion, to operate on elderly persons with a good or fair kidney function and a poor heart than vice versa. Unless inhalation anesthesia is to be employed the lungs seldom play any great part. Glycosuria, if properly handled, is no obstacle. Whenever possible the preoperative measures should be given or taken with the patient up and around. If possible, he should be allowed to stay at home and come to the office for his treatments. If he has to be hospitalized he should be encouraged to get out of bed and get around as much as possible. Elderly people do not stand staying in bed any too well.

Careful attention must be given to the patient's fluid intake and output. The output in prostatics must be maintained by an indwelling catheter or regular catheterization, the former preferably. The intake must be measured and, if necessary, augmented by intravenous glucose. The diet must be palatable and of proper quantity given at frequent intervals. Elderly people, especially if ailing, are prone to eat too little. Due consideration must be given to their bowel elimination; a daily bowel movement should be insisted upon. If necessary, mild laxatives or enemas should be given. The saline purgatives are to be avoided. They remove too much of the body fluids. The length of preoperative preparation, naturally, is variable, but every effort must be made to rehabilitate these patients as thoroughly as possible before surgery is attempted.

In no group of patients is "optimism, cheerful encouragement and subtle management" so absolutely essential. (Guthrie.) It might be added that in no group will the old adage "Treat the patient as well as the disease" pay better dividends.

Anesthesia: The subject of anesthesia in the aged is still an open question, but upon one point all agree: the anesthetist must be a good one, if possible. Some advocate general anesthesia, others prefer a combination of local and general, and a few use only spinal. It is our opinion that wherever and whenever possible local infiltration should be employed. When properly used, there is no pain, no apprehension about losing consciousness, and no shock, unless the operative procedure is too lengthy. In all other cases we are partial to the use of spinal or intravenous sodium pentothal. In our hands this latter drug has been a Godsend to the elderly patient who has to be given general anesthesia. When given with oxygen inhalation continuously, we have had no untoward after effects. It certainly lessens postoperative nausea, and practically has eliminated the dangers of pulmonary complications. To summarize, the anesthesia should be in the hands of a skilled anesthetist and adapted to the individual case.

Postoperatively, elderly patients are more prone to complications than those in any other age group. It should be our object to forestall and prevent these complications. This entails intelligent and careful nursing care, plus watchfulness and attention to detail on the part of the surgeon. In our experience, the postoperative complications most to be dreaded are shock, cardiac failure and renal involvement.

Shock can be greatly reduced by adequate hemostasis during operation and by not prolonging the operation beyond certain time limits. Cardiac failure is usually secondary to shock. It can be further reduced by proper preoperative management. Postoperative

anuria is the complication which gives us most concern. At times, in spite of everything one does, the patient dies. We feel that a careful and accurate record should be made of the fluid intake and output. If the intake is maintained at two to three thousand cubic centimeters and the output at 1200 to 1500 every 24 hours, the chances of anuria will be greatly lessened. Immediately postoperatively we give 1000 cc. of 5 per cent glucose in water, and encourage the patient to take as much as possible by mouth. It is most important that all intravenous solutions be given very slowly. The position in bed of elderly people must be changed frequently. Opiates should be used sparingly, and the barbiturates cautiously. It is well to remember that old men may have a residual urine and may have to be catheterized. The day following the operation, the patient, if not nauseated, should be given food and a saline enema. The back rest should be used early and he ought to be gotten out of bed as soon as possible.

Operation: Any type of operation is usually withstood well by the aged. The surgical aftercare should be the same as in any other age group, remembering that the aged do not stand confinement to bed well.

CONCLUSIONS

1. Surgery on the aged is a problem of increasing importance due to the increasing number of aged individuals.

2. The aged stand elective surgery well. They do not stand too prolonged or multiple-stage operations.

3. The keynote to success in surgery on elderly people is adequate preoperative care, competent anesthesia, skillful, gentle surgery and proper postoperative attention.

4. We plead with you not to postpone elective surgery in the aged until something has to be done either to prevent further suffering or to prolong life. It then ceases to be elective.

5. The medical profession, being partially responsible for the increased longevity of mankind, must assume, willingly or otherwise, the responsibility of intelligently and honestly treating this aged group.

MEDICINE OF THE PAST AND OF THE FUTURE

E. V. CALDWELL, M. D.
Huntsville, Alabama

Any study referring to the past and the future necessarily must be one of evolution. Evolution means a change for the better, and its history is one of a slow process. In the field of mankind, education goes hand in hand with the process of evolution. Nothing ever stands still. Change in the universe is continuous and constant. What was once the luxury of kings is now the demand of the populace. What was excellent service in the past is now considered crude and insufficient in every field of endeavor. A good living some years ago is now barely an existence.

Man's endeavor is ever upward towards a fuller life, and often his desire has caused him, in his haste to realize a dream or a vision quickly, to make serious mistakes along the way. Evolution is too slow for his impetuous nature. He fusses and fumes in his efforts to hasten its slow and deliberate pace. There has never been a spontaneous uplift of man. His upward surge has been the end result of long-time planning and education, accompanied by many mistakes and setbacks. Even religious wars are recorded in history. In spite of the black pages in history that such wars have caused, Christianity has grown and spread to almost all of the corners of the earth, although it has consumed thousands of years in reaching its present stage. Thousands of earnest souls have been spent and bodies broken in their zeal to hasten the evolution of Christianity so the millennium would come. But men's minds and hearts change slowly. New laws and customs cannot be thrust upon them. Nevertheless, earnest men and women in their zeal to help mankind in *their* generation offer plans that are not all bad but not all good because the plans offered are not sound enough not to destroy as much as they help, thus defeating their earnest intent.

Thus, a dream of a new method of delivering medical, surgical and hospital services to

all mankind, compulsory, prepaid, directed and administered by one man appointed by the government, paid for by a 12 per cent tax on gross incomes of all laboring people and corporations, and 7 per cent on gross incomes of professional people and people who have independent incomes up to $3000, has been envisioned and offered in our Congress. The plan itself is not inimical to the mind of the medical profession. However, as it is proposed in the zeal of its proponents, we believe it will destroy more good service to the people than it will create, that it will stultify professional initiative, and degrade the medical profession to political appointees. We believe this proposal in its present concept, if thrust and forced upon the people and the medical, hospital and nursing professions, will fall short of its conception, set medicine and public health back a generation, and decrease longevity.

Nevertheless, the medical profession believes some plan should be worked out whereby all people may obtain prompt and satisfactory medical, surgical, obstetric and hospital care. Even so, it does not believe that it should be forced and thrust upon the people, and that the medical profession should be degraded in the doing, that political appointment to staff positions should supersede personal service and responsibility to the patient, and that a doctor's ability to prosper should depend upon his political acumen rather than upon his worthiness and responsibility to his patient.

We believe this means that a complete, prompt and prepaid plan will finally be worked out by a process of education and evolution, though years may elapse before its perfect materialization. The best minds of the country think that education and evolution will ultimately be the adjudicator, even if the present proposed scheme of socialized medicine is thrust upon the people and the professions, since, in its present concept, service to the people will so deteriorate, the medical profession will be so robbed of its incentive to initiative, public health will be so reduced, and longevity so shortened that the people will soon become disillusioned as to the grandeur of the plan, and that all classes will eventually rebel against the special taxes and one man rule and demand a return to where we are now to begin all over again.

If education and evolution are permitted to evolve a plan of medical service that will force a doctor to make his living through his worthiness and personal service and responsibility to his patient, free from political preferment, and allow the patient to select from the worthy in the profession on the basis of their records as faithful, competent and prompt servants of the people, the initiative of the profession will be preserved, the people will be promptly and competently served, the public health will continue to improve, and length of life will continue to increase.

Since no one knows the perfect solution now, but believing some plan preserving all the fundamental relationships mentioned above should be worked out, the profession has evolved several schemes to be tried and studied in various sections of the United States. The evolution of these plans has been set in motion, denuded of those elements that have proven in other countries to be destructive rather than creative.

The problem has been approached from several angles:

1. Hospital insurance is available with no medical, surgical, obstetric or special services included, but giving the patient the right to select any doctor he chooses. The Hospital Service Corporation of Alabama offers this protection.

2. Through groups whose policies insure for all services, premiums being collected and prorated to hospital, medical, surgical and specialty services. If the total premiums collected do not pay all services in full, the total collections are prorated to each service and the doctor has to lose the difference. This plan is controlled by a board of directors composed of doctors participating in the plan and members from the group insured. These group policies and premiums are the responsibility of state insurance departments, and beneficiaries must select a doctor from the group of physicians in the organization.

3. There are industrial corporations which require those employed to take out group insurance in old-line insurance companies for partial or total hospital and medical care, and the insured has the right to choose any doctor in the community he desires. The insured pays one-half of the premiums and the corporation the other half, and if there is

any profit at the end of a year or period of years it reverts to additional hospital or medical benefits to the insured. This plan is in operation at Merrimack Manufacturing Company, Huntsville, Alabama.

4. Then there are those large industrial corporations that furnish hospital, medical and all specialized services, own their own hospitals or arrange for hospitalization, but require the employees to use one of the salaried staff of doctors. This is not an entirely free choice plan but works well with very large corporations.

Despite these approaches, the great problem is: How can one of these plans be adapted to a county with a centralized hospital and allow free choice of doctors not under political control? This is the question confronting the nation now.

Shall the government force a compulsory insurance plan which will destroy more benefits than it creates, or shall the profession and the people work out a free plan without political control? The medical profession contends that the latter plan is safer and will not destroy but will continue to create initiative, competency, worthiness and promptness of service to the public, and will maintain an increasing public health and length of life; the patient will not be handicapped in the selection of the physician of his choice; hospitals will continue to improve; and medical schools will have to be better every decade of their existence.

In horse and buggy days a community was determined by the time it took to cross it. Its center was a store, church and school. It had its merchant, doctor, teacher and circuit rider, and was happy and content. Economic evolution has built good roads and fine schools and created rapid transportation, and made it impossible for the country merchant, doctor and circuit rider to live in the country community. The county is the community of today, the state the immediate region. Gone forever is the country merchant, doctor and circuit rider. It took a hundred years of education and evolution to put them out of business. Never again can a physician make a living and educate his family and enjoy life in the country. He cannot apply modern medicine just in the home. The people would not stay with him even if he were forced to reside among them. All those who have the price would leave him; only those who could not pay would stay with him. The education required of the doctor and the people themselves has forever done away with the country doctor. So, as time goes on, by education and evolution adequate medical service to the people everywhere will be perfected to the common benefit of all concerned, if the government will not set up political medicine.

The ideal plan is for a county to build and equip an adequate hospital from funds raised by public subscription and from the appropriating bodies within its bounds, and have all worthy physicians in the county and the municipalities on its staff; to appropriate monthly, equitably from county and municipalities, sufficient funds to make up the deficit caused by the care of all those in the county who cannot pay. For the privilege of being on the staff every member of the staff is obligated to take his turn in caring for the indigent. Full publicity should be given to the fact that if there are people in any section of the county who, even though they have means, cannot get a physician, they should come in to the hospital and the doctor of their choice will be called for them by the hospital management. If their choice cannot be contacted, a member of the staff in the section in which the case apparently falls will be called. Under this scheme no one in any county could truthfully say there is inadequate care of the sick. A district hospital could be built by two or more counties under this plan if necessary. Madison County, Alabama has such a hospital. Every one in Madison County is within an hour's drive of the institution. Good roads go to almost every home in the county. Although there are those who will not go to the hospital, they cannot say that adequate medical and hospital service is not provided for them if they would only avail themselves of it.

If the government wants to help build these hospitals, let it do so, but leave the administration in the hands of the profession and the appropriating bodies. Let the staffs be open to all worthy members of the profession in the county, with the obligation to give free service to the indigent, and permit the people to have free choice of physicians.

It has taken twenty-nine years for the Madison County hospital, through education of both doctors and the people, to evolve

from a small institution in a wooden structure, poorly equipped, to its present state of a practically fireproof brick building of 85 beds, thoroughly manned by a staff of cooperating doctors, within an hour's ride of every citizen in the county. It will take another period of years to educate the people of the county to a voluntary insurance, prepaid plan of medical and hospital care. It would be better to build only when communities themselves are educated to it and then leave the institution under local administration, with all worthy doctors participating, the people having free choice of physicians. Hospitals of this type are graded by the American College of Surgeons which stimulates better equipment and better service to the public.

It is fair to assume that old-line insurance companies would cooperate by offering an insurance policy covering hospital, nursing, dental, medical and surgical services, in part or wholly, as the Provident Life Insurance Company of Chattanooga, Tennessee is now doing at Merrimack Manufacturing Company, Huntsville, Alabama, with reasonable premiums per person or families on a county- or district-wide basis, if they were assured that the government would not enter this field of insurance. Under this proposal, insurance companies would sell the protection. The people would rapidly come into the plan as they become educated to it. Should there be those who could not carry the insurance, the county and municipalities should appropriate for their care, as is done in Madison County, Alabama, now. And those who could, would, in self defense, take this insurance.

Under such a plan there would be no malingerers. Free choice of physicians could be exercised. Doctors would be forced to be worthy and faithful to be chosen by the people. Hospitals would be under local administration. They would still have classification by the American Medical Association and American College of Surgeons to stimulate their improvement. Public health would continue to improve, and medical teaching institutions would still improve with time, unfettered by political influence.

FIBROCYSTIC DISEASE OF THE PANCREAS

W. A. DANIEL, JR., M. D.
Montgomery, Alabama

Fibrocystic disease of the pancreas is a disorder of nutrition, the cause of which is unknown. It is thought to be congenital and familial, leading to fibrosis of the exocrine portion of the pancreas and interference with the production or passage of pancreatic enzymes; which, in turn, give rise to a chain of symptoms characterized by malnutrition, chronic pulmonary disease and frequent large, fatty, foul stools; and eventual death unless adequate treatment is instituted.

As with all new or recently recognized diseases, fibrocystic disease of the pancreas has come to the fore, and much experimental work has been published. It seems appropriate to review the disease at this time, for, although the incidence is low, it is a disorder that cannot long be neglected if the individual is to survive.

Read before the Association in annual session, Montgomery, April 18, 1944.

The disease is apparently congenital; however, one reported case concerned that of a child whose identical twin exhibited no symptoms.[1] As yet, no proved cause of the disease has been found. There seems to be a tendency for the disorder to recur in successive children once it has appeared. Although the pathologic findings of the pancreas give rise to the name of the disease, the body as a whole suffers and other organ-systems show significant alterations. The pathologic changes of the pancreas are more often seen in the microscopic than in gross observations. The exocrine parenchyma shows extensive damage, as evidenced by fibrosis, distention of the small ducts and acini with inspissated material, as well as degenerative changes of the cells. The larger ducts are frequently obstructed.

1. Daniel, W. A., Jr.: Fibrocystic Disease of the Pancreas; Report of 8 Cases, Am. J. Dis. Child. 64: 33-42 (July) '42.

Second to the pancreas are the pulmonic changes which are usually the cause of the patient's death. These changes vary from areas of bronchitis to bronchiectasis, abscess cavities, atelectasis, emphysema, and bronchopneumonia. Other pathologic changes may be squamous metaplasia of the respiratory passages, fatty infiltration of the liver, keratomalacia and xerophthalmia.

These many changes lead to two general groups of symptoms which characterize the disease: those of the respiratory system and those referable to the digestive tract. As a rule, the respiratory symptoms so overshadow those of the digestive tract that the latter are at first neglected. In all but two patients of a series previously reported by the author,[1] the onset of symptoms was during the first two months of life. It is almost routine to obtain a history that the child first had a cough shortly after birth, which became progressively worse and was associated with a failure to gain weight satisfactorily in spite of a multiplicity of formulas. Upon questioning, the stools are usually described as large, frequent and foul; occasionally, they had the appearance of butter. On examination of an infant with fibrocystic disease of the pancreas, few physical findings are outstanding other than the malnutrition and some difficulty of respiration. It is always surprising that the insignificant physical findings of the chest are indicative of the marked pulmonary changes found at autopsy. The majority of our patients have had only a few fine or coarse rales as evidence of the extensive underlying pulmonary damage. Occasionally, one may find suppression of breath sounds, bronchial breathing, dullness to percussion or hyperresonance. The rate, as well as the depth of respiration, is frequently increased and especially so shortly before death. The cardiac examination reveals no changes indicative of the disease. The abdomen is usually distended and the liver may be palpable. The genitals, buttocks and extremities exhibit marked malnutrition. Xerophthalmia, as well as keratomalacia, may be present because of failure to absorb the fat-soluble vitamin A, but these changes are rare. The blood count usually shows a variable degree of leukocytosis as well as a slight anemia. More elaborate tests may be performed. The most diagnostic test is an estimate of the amount of trypsin obtained in the aspirated duodenal contents; the absence of this enzyme is pathognomonic. A flat vitamin A absorption test is almost as valuable as the enzyme analysis although a low rise may also be obtained in celiac disease; however, celiac disease usually has its onset at a later age.

In general, there are three groups into which the patients having fibrocystic disease of the pancreas may be divided. The term "meconium ileus" characterizes the first group of patients. At birth, the intestine is usually filled with meconium, which is relatively thin in a normal infant; however, a true intestinal obstruction may be produced by a thick gelatinous meconium. Autopsies on infants having this condition have shown a marked fibrosis of the pancreatic glands, inspissation of the meconium in the ducts, or deformity of the ducts. Because of the serious prognosis, effective treatment should be instituted as soon as possible. Farber[2] has found that by introducing a one per cent solution of pancreatin directly into the duodenum that the meconium was altered; thus the intestinal obstruction may be relieved without surgical means in many instances. One should bear in mind then that an infant who vomits persistently after birth and passes no meconium may have fibrocystic disease of the pancreas and the possibility should be investigated.

The second group of patients constitutes the largest number of cases. The characteristic symptoms discussed above usually appear extremely early. In the majority of cases seen by the author, the symptoms had begun by the end of the first one to three months of age. The next three months were characterized by increased severity of the early symptoms and the development of others included in the syndrome. Perhaps a review of a fairly typical history will help to illustrate the disease in this group of infants.

CASE HISTORY

The patient was a 3 months old white girl who was admitted to the hospital because of a cough she had had since the age of 6 weeks. Vomiting and respiratory difficulties following attacks of coughing had occurred the month prior to admission. Birth was without difficulty and at

2. Farber, Sidney: To be published in J. Pediat.

term. Breathing had occurred spontaneously and progress had been good until the age of 6 weeks when she began to have attacks of coughing. The weight at birth was 5 lbs. 6 oz. The family history was significant in that three of ten siblings had died at the age of 3 months, all of whom had symptoms similar to those of the patient. The weight of the patient at the time of admission was 6 lbs. 1 oz.; she was small, pale, coughed almost continually and appeared to be chronically ill. The significant physical findings were confined to the chest, with rapid respirations, a slight inspiratory and expiratory wheeze, and a dry hacking cough. The lungs were hyperresonant to percussion, and a few clicking rales were heard over the base of the left lung. About six voluminous yellow to green foul stools were passed daily. The respirations became more difficult, and little air seemed to pass into or out of the chest; the child died four days after admission to the hospital. At autopsy, a partial collapse of the lower lobe of the left lung was found, as well as multiple areas of pneumonic consolidation. A purulent bronchitis involving the entire bronchial tree was present. Changes in the pancreas were typical of those found in fibrocystic disease.[1]

The last group consists chiefly of older children whose infant history has not been outstanding. The respiratory symptoms again predominate and there is some evidence of malnutrition or recent weight loss. Once again, a case history will help to illustrate this group of patients.

CASE HISTORY

The patient was a white girl, four years of age, who had been well until she was three years old. At that time she developed a non-productive cough which was diagnosed as bronchitis. No treatment was given. Three months later an otitis media developed and the bronchitis recurred; at this time, a sulfonamide was given with cessation of the symptoms. In approximately three months the same symptoms were present, and again they disappeared with the administration of sulfadiazine. However, after this attack the child complained of being tired, had a slight fever, and developed a productive cough which was worse when lying down. She had lost approximately five pounds during the six months preceding her admission to the hospital. At the time of admission, the child appeared to be poorly nourished, somewhat pale, and had only a few pulmonary findings. Expansion of the lungs was decreased and crepitant rales were heard throughout both lung fields but no dullness was found. During her stay in the hospital, the pulmonary findings became more serious, and bronchoscopic aspiration revealed *Staphylococcus aureus*, *Streptococcus viridans* and pneumococci. The child was treated with sulfadiazine, type-specific pneumococcus antiserum, and later penicillin. In spite of this treatment the child became weaker and died. At autopsy, it was found that the child had fibrocystic disease of the pancreas, partial pulmonary atelectasis, bronchopneumonia, pulmonary abscess, and metaplasia of the ducts of the bronchi and pancreas.[3]

Although the changes in the pancreas appear to be the most important in any consideration of the disease, it must be remembered that this syndrome produces alterations in many parts of the body. Therefore, the treatment must be multiple if these changes are to be counteracted or returned to normal in any degree. The lack or great decrease of pancreatic enzymes, particularly trypsin and lipase, is of primary consideration. At the present time, the best means of substitution therapy for the absent enzymes is with enteric granules (Panteric Capsules: Parke, Davis) of pancreatin which may be mixed with the milk or sprinkled on food and given in doses of from five grains to five grams or more daily. The extensive changes in the lungs are thought to be due primarily to a lack of absorption of vitamin A, which gives rise to disruption of the cellular border of the respiratory passages permitting invasion by bacteria, with the production of the pathologic changes previously described. The poor absorption of vitamin A is corrected by giving parenteral vitamin A preparations or the administration of large doses by mouth. It has been recommended[4] that giving prostigmine to improve the muscle tone of the intestinal tract leads to a greater absorption of vitamin A; this drug has been given parenterally as well as in an oral dose of 7.5 mg. of prostigmine bromide three times a day to a child 2 years of age. The marked respiratory changes, characterized chiefly by *Staphylococcus aureus* infection with the production of bronchiectasis and small abscesses, are combatted by the sulfonamides, although the response is usually unsatisfactory. Penicillin may prove to be of great value. The diet should be high in calories, with approximately 50 per cent more than the calculated caloric requirement for the age of the child. As a rule, a diet high in protein, low in fat and starch but with the addition of sugar is satisfactory. The large stools have been shown to be associated with a nitrogen loss

3. Case Reports of Children's Memorial Hospital, Oct. '43.

4. Flax, J. L.; Barnes, M., and Reichert, J. L.: Vitamin A Absorption and Its Relation to Intestinal Motility in Fibrocystic Disease of the Pancreas, J. Pediat. 21: 475-484 (Oct.) '42.

and may be improved or corrected by the administration of the panteric granules and casein hydrolysate.[5] It has been shown in a child thought to have fibrocystic disease of the pancreas that administration of pancreatic products resulted in a weight gain which was immediately lost when those products were discontinued; but, three pounds were gained in two weeks when the treatment was resumed. On the basis of this finding, it may be possible to use the products as a therapeutic test.[1]

Thus, it is evident that fibrocystic disease of the pancreas is an illness involving many parts of the body. Until recently, it was not diagnosed except at autopsy. However, there are three symptoms the presence of which should cause the disease to be suspected: failure to gain weight; respiratory distress, especially coughing; and, large, fatty, homogeneous, foul-smelling stools. If this chain of symptoms is present, one should suspect pancreatic disease and an effort be made to prove or disprove its presence. Laboratory findings offer the only definite means of diagnosis during life and should be done when possible. If such means are not available, we believe that one is justified in employing a therapeutic test. In general, one may divide the patients into the three groups discussed above; and, although the prognosis is poor, recent methods of treatment show signs of improving the outcome if the presence of the disease is suspected, diagnosed and promptly and thoroughly treated.

115 S. Union St.

5. Stohl, A. T.; May, C. D., and Shwachman, H.: Studies of Nitrogen and Fat Metabolism on Infants and Children with Pancreatic Fibrosis, J. Pediat. 23: 267-269 (Sept.) '43.

PROBLEMS OF DIABETES MELLITUS AND THEIR MANAGEMENT

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It is reliably reported that the present diabetic population of the United States approximates three-fourths of a million. The dearth of internists specializing in diabetes compared with the wide distribution of these patients means that the problem of their care must be met in large measure by the family physician. Further, this problem promises to grow steadily in magnitude because of the progressive enlargement of the diabetic population which has resulted from the rising incidence of the disease and from the increase in the average life span of the diabetic.

Two factors have contributed to the increased prevalence of diabetes. First, the population as a whole is steadily aging and diabetes predominately has its onset in middle life. Second, improved medical practice has resulted in the more frequent diagnosis of the disease. Mortality data clearly reflect the growth of the diabetic population. For the registration area of the United States diabetes has advanced in importance as a cause of death from 27th place in 1900 to 9th place in 1940, and by 1960 it will probably surpass tuberculosis and premature births to assume 7th rank.

Statistical trends indicate not only an expanding number of diabetics in the future but also an increasing longevity for each patient. Joslin reports for his patients that the average duration of the disease at death was 4.9 years during the Allen era (1914-1922), 12.1 years at the close of the Banting era (1922-1936), and 12.5 years in 1940 during the current Hagedorn era (1936 to date). Joslin estimates an average life span of 20 years for the individual who develops diabetes in 1944. The juvenile diabetic has a much greater life expectancy; hundreds already have survived two decades and may anticipate attaining at least 70 per cent of their normal life expectancy.

Insulin, more adequate dietaries, and advances in medical care have effected this increased longevity for the diabetic but they have not eliminated deaths predominantly resulting from the disease. Rather, the major cause of death no longer is coma, which occurred with relative rapidity during the preinsulin era, but has become arteriosclerosis,

Presented at a meeting of the medical staff of Jefferson Hospital, Birmingham.

the development of which is permitted by the marked prolongation of the diabetic's life. Again the statistics of Joslin are illuminating. In the Allen era 42 per cent of diabetic deaths resulted from coma and 25 per cent from arteriosclerotic complications; during the Hagedorn era coma deaths have fallen to 4 per cent and arteriosclerotic deaths have risen to 60 per cent. Essentially it is the elder diabetic who dies; if his death be premature, the reason is that arteriosclerosis has set in prematurely and excessively. This fact discloses the major failure in the therapy of diabetes since the advent of insulin and thereby reveals the major problem of therapy for the future. We who treat diabetes must employ insulin and its adjuvants not only to prevent coma but also to forestall arteriosclerosis.

While the prevention of premature arteriosclerosis is of outstanding importance, the treatment of diabetes entails further and broader aims. Briefly, the objectives of therapy may be defined as follows:

(1) To return the patient so far as possible to a normal life, physiologically, socially and economically.

(2) To restore carbohydrate tolerance to the greatest possible degree, especially in juvenile patients.

(3) To prevent needless deaths from coma, avoid infections and delay the onset of arteriosclerosis with its attendant complications.

(4) To secure the above objectives with a minimum of inconvenience (but not to sacrifice the objectives for the sake of convenience).

The formulation of theoretical goals of treatment in diabetes which are widely acceptable involves no great difficulty. The delineation of practical standards of control which are most propitious for the realization of these goals is the crucial consideration. Here, unfortunately, outstanding authorities differ markedly. In place of a clear-cut, unmistakable definition of optimal level of diabetic control to serve as a guide for the general practitioner, he is confronted with a maze of contradictory opinions. Boyd demands absolute normoglycemia and aglycosuria during the entire 24 hours. Wilder advocates a slight glycosuria to guard against insulin reactions. Joslin tolerates a 24-hour glycosuria up to 10 per cent of the daily intake of carbohydrate. Tolstoi entirely disregards glycosuria so long as the patient maintains his weight and sense of well-being and exhibits no ketonuria. Yet, the question of the most desirable standard of control is the heart of the diabetic problem for the family physician. The answer prescribes the goal he is to strive for in his day to day management of patients, provides the measure whereby he can evaluate his results, and ultimately in large degree will determine the adequacy of diabetic treatment.

In factual terms, the question as to the desirable standard of diabetic control reduces itself to whether hyperglycemia and glycosuria are permissible and, if so, to what extent. Or, is full diabetic control essential to the attainment of the previously set forth goals of therapy? The literature on diabetes abounds in papers which cite the harmlessness and at times the advantages of hyperglycemia and glycosuria, but few take into account either the short-term effect on carbohydrate tolerance or the long-range effect on the development of arteriosclerotic complications. Such considerations are disregarded while emphasis is placed on the restoration of the patient to a normal life with a minimum of dietary restrictions and insulin injections.

Experimental investigations have conclusively established that hyperglycemia is destructive of islets of Langerhans rendered sensitive to metabolic overloading; and, thereby, in human diabetes presumably is deleterious to the functional recovery of islets and the restoration of carbohydrate tolerance. In the early 1920's Frederick Allen devised the technic of subtotal pancreatectomy to make dogs potentionally diabetic; he induced hydropic degeneration of the beta cells of the islets and precipitated the disease through high carbohydrate and high caloric feedings while fasting and high fat diets did not cause diabetes. Fifteen years later Frank Young first employed multiple injections of especially prepared anterior pituitary extract as a diabetogenic agent; the disease occurred as a result of insular degeneration in animals made hyperglycemic by diets rich in carbohydrate or in protein but did not develop in the absence of hyperglycemia in animals whose islets were protected by fasting, fat feeding or insulin injections. In cats rendered diabetic

by Young's method, Lukens has effected insular recovery and cure of the disease through strict diabetic control with diet and insulin; untreated animals on the other hand, suffered permanent diabetes.

In agreement with these experimental studies is the well established clinical observation in human diabetes that persistent full control almost invariably results in reduction in insulin dosage. By maintaining constant normoglycemia and aglycosuria it is possible in an appreciable percentage of adult patients to reduce gradually and then finally to eliminate insulin administration. While Shields Warren has reported regeneration of islet tissue in human pathologic material, it must be pointed out that increased carbohydrate tolerance does not necessarily indicate such regeneration; account must be taken of improvement in hepatic functioning, reduction in weight, and changes in endocrine gland activity as additional factors influencing carbohydrate metabolism. Yet the fact remains that tolerance rarely improves in the absence of excellent diabetic control. Of 75 diabetic children followed from 6 to 30 months subsequent to their initial standardization, a reduced insulin requirement per kilo of body weight was noted only in those patients who exhibited normal fasting blood sugars and 24-hour sugar-free urine specimens in 90 per cent or more of tests, although almost the entire group gained normally and enjoyed general good health. We must conclude both experimentally and clinically that the evidence is strong that hyperglycemia and glycosuria are not compatible with recovery of carbohydrate tolerance.

Since the etiology and pathologic physiology of arteriosclerosis have not been fully elaborated, it is difficult to evaluate precisely the place of hyperglycemia in its development. Presumably hyperlipemia, hypercholesterolemia, recurrent ketosis, dehydration, nutritive deficiencies and other factors also play a part. Whatever the cause, certainly extensive clinical experience has proven beyond doubt that in the course of time untreated or ill-treated diabetes leads to excessive arteriosclerosis in the majority of instances. For reasons unknown, a few patients seem to escape this consequence of neglected diabetes. In recent years it has become the fashion to assert that protamine insulin, by suppressing ketosis, guards against arteriosclerosis; and Tolstoi alleges that glycosuria, however great, may be disregarded under a therapeutic regimen of protamine insulin and high carbohydrate dietary, provided there be no ketonuria or weight loss and a sense of well-being be present. This concept is entirely at variance with the views of Dillon who has pointed out again and again that the sclerotic complications, especially gangrene of the extremities, develop predominantly in the mild diabetic who neglects his diabetes for years because no pronounced symptoms force the care of his moderate glycosuria. His metabolic status is fundamentally similar to that of the protamine insulin patient who persistently exhibits glycosuria. Protamine insulin first came into use in 1936; the span of years since that date has been much too short to justify the conclusion that the latter class of patient will escape the arteriosclerosis which occurs in the former. With present knowledge, the single method of therapy that with certainty will guard against premature arteriosclerosis is full diabetic control. In this manner, biochemically the diabetic closely approaches the normal, and normally there is no premature and excessive arteriosclerosis.

Objection has been raised to full diabetic control on the ground that the patient is so burdened with dietary restrictions and multiple insulin injections as to preclude a life of ordinary enjoyment and activity. Such has not been the experience of dozens of the writer's patients attending school or gainfully employed, self-supporting and frequently married and with families. A daily dietary prescription of 100 to 240 grams of carbohydrate, divided into three meals, and proper instruction permit the patient to select his diet correctly but inconspicuously under any circumstances, with the essential difference from the normal being the avoidance of sweets. It is the rare case of diabetes which cannot be controlled with insulin administration limited to before the morning and evening meals, at which times the patient usually is at home or at a convenient site. In passing, it might be remarked that well controlled diabetics seldom suffer severe insulin reactions. Such reactions result from errors in dosage, failure to balance insulin with adequate food, neglect to take ex-

tra food to cover unusual exercise, and the non-recognition of the early symptoms of hypoglycemia. The well-trained diabetic avoids these errors and the patient who has been taught to maintain full control of his diabetes is unescapably well trained. The careless diabetic, careless of diet and glycosuria, makes the mistakes which lead to severe reactions, particularly the severe nocturnal reactions of protamine insulin.

Thus far, we have defined the objectives of therapy in diabetes and discussed the question: What standard of control is best adapted to the realization of these objectives? This is the crucial question from the viewpoint of practical management. In the writer's opinion, the only answer is full diabetic control. By this term we mean:

(1) The diet is nutritionally adequate and of such caloric value as to restore normal weight.

(2) The fasting blood sugar is consistently normal (80-120 mg. per 100 cc.).

(3) The 24-hour urine specimen is consistently free of sugar and of acetone and postprandial blood sugar values do not surpass 180 or 200 mg. per 100 cc.

(4) Hypoglycemic reactions are infrequent or absent.

A final problem remains to be considered: the method of diabetic standardization which will effect full control of the disease. Doubtless various procedures may be utilized to secure this goal but it is more easily reached when sought after systematically and with the underlying pathologic physiology of the disease in mind.

Insulin deficiency is at the root of diabetes and its basic manifestation is hyperglycemia, initially of exogenous and later also of endogenous origin. With slight insulin lack, there is a delayed storage and oxidation of the exogenous flood of carbohydrate entering the blood stream after meals and we note the characteristic phenomena of mild diabetes, postprandial hyperglycemia with a normal fasting blood sugar. As the deficiency of insulin becomes greater, insufficient is available to bring about the complete utilization even during the overnight period of fasting of the exogenous carbohydrate which has accumulated postprandially through the day. Thus there is present a marked postprandial hyperglycemia with a lower but still abnormally elevated fasting blood sugar, the distinguishing features of moderate diabetes. With still more pronounced deficiency of insulin the inadequacy becomes so great that carbohydrate from foodstuffs is little utilized or stored and glycogen stores are depleted, with the result that the liver produces glucose from protein and fat and also ketone bodies at an excessive rate. In this manner hyperglycemia occurs both from exogenous and endogenous sources, and the latter carries with it the potentially dangerous formation of ketones. These are the metabolic criteria of severe diabetes.

The character of severe diabetes may be evaluated by controlling exogenous postprandial hyperglycemia with pre-meal injections of rapidly acting standard insulin so that a normal blood sugar of approximately 120 mg. per 100 cc. is obtained at 9 or 10 P. M. (when the effect of the last standard insulin injection is approximately completed), and then comparing this blood sugar value with the one secured in the fasting state or about 7 A. M. the following morning. The extent of the increase in blood sugar between 9 P. M. and 7 A. M. constitutes a rough measure of the severity of the endogenous glucose production which characterizes severe diabetes. Such "night rises" in blood sugar vary in magnitude from 50 to 350 mg. per 100 cc. and are invariably accompanied by ketosis of some degree, because endogenous hyperglycemia is hepatic in origin, and with insulin lack or the absence of glycogen the hepatic production of glucose and ketones goes hand in hand.

In treatment of the average uncomplicated patient, the severity of the diabetes determines only whether or not insulin is to be employed and the type or types to be administered but does not affect the dietary prescription, which is entirely based on weight and activity and is planned to restore normal weight. With moderate activity we customarily prescribe for the total daily food intake 30 calories per kilo of standard weight if the patient's weight is about normal, 20 to 25 calories if overweight and 35 to 45 if underweight. As pointed out earlier, 100 to 240 grams of carbohydrate per day permit an adequate bulk of food to be conveniently obtained and tend to limit the necessity for and dosage of insulin injections required by higher carbohydrate intakes. One gram per

kilo of standard weight fulfills the protein requirement. After calculating the calories furnished by the carbohydrate and protein, we prescribe sufficient fat to make up the caloric allotment of the diet. Having determined the diet we next consider the advisability of insulin administration. At the patient's initial examination, invariably a blood sugar analysis and check of the urine for sugar and acetone are made. The presence of ketonuria is an indication for immediate insulin injection. Likewise all juvenile patients require and are given insulin from the outset. Further, experience has revealed that any patient with a fasting blood sugar in excess of 300 mg. per 100 cc. will ultimately need insulin; hence we do not delay its administration.

In order to evaluate both the patient's diabetes and the effect of our therapy during the course of standardization, we routinely obtain a daily fasting blood sugar and do qualitative analyses upon four fractional urine specimens covering the periods 7-11 A. M., 11 A. M.-4 P. M., 4 P. M.-9 P. M., and 9 P. M.-7 A. M. so as to determine the glycosuria after each meal and during the overnight fasting period. If the fasting blood sugar be normal, our patient has a mild diabetes and frequently adherence to the diet for a few days is sufficient to overcome glycosuria and establish diabetic control. To eliminate the possibility of a high renal threshold, a blood sugar is drawn 2 hours after supper. If this report is above 180 mg. per 100 cc. or if glycosuria or fasting hyperglycemia persists, then insulin administration is necessary. The presence of heavier glycosuria in the 7-11, 11-4 and the 4-9 urine specimens than in the overnight 9-7 specimen indicates we are dealing with diabetes of moderate grade.

It will be recalled that the basic deficiency in mild or moderate diabetes is insufficient insulin to prevent hyperglycemia after meals. Hence, the type of insulin required is rapid in action, and either regular or crystalline insulin is given before meals in order to overcome postprandial hyperglycemia. At the end of each day we appraise the fractional urinalyses and adjust our insulin dosages for the next day until we have prescribed sufficient insulin before each meal to eliminate glycosuria after the meal. By this system of insulin administration, the presence of glycosuria after a meal does not call for an increased dose before the next meal but rather means a greater dose before that same meal the following day. The objective is to forestall glycosuria, not to reduce it after its occurrence. Usually the establishment of freedom from glycosuria is followed by rapid recovery of carbohydrate tolerance, so that insulin administration at noon time can be eliminated in every patient, the supper injection in many patients, and, in the course of time, all injections in perhaps 50 per cent of patients. We are aware that many authorities advocate a single daily injection of protamine insulin in mild or moderate diabetes, but, in our experience, full diabetic control is often not obtained, nocturnal hypoglycemia frequently occurs, and there is failure to secure the improvement in tolerance which full control brings. It must be admitted, however, that an occasional patient, well stabilized on morning and evening injections of regular insulin, is very well controlled by a single dose of protamine insulin.

Failure of the fasting blood sugar to return toward normal or the existence of heaviest glycosuria in the overnight specimen renders likely that our patient has diabetes of severe degree. We have already described the procedure of comparing the 9 P. M. and 7 A. M. blood sugar values to ascertain the type of diabetes and, if severe, to approximate its seriousness. The "night rise" in blood sugar with its accompanying ketonuria is the diagnostic mark of severe diabetes. Standard insulin with its 4 to 6-hour duration of action is ineffective in checking this endogenous hyperglycemia during the night unless administered between midnight and 3 A. M., but the prolonged, steady action of protamine insulin is ideally suited for the purpose. From a metabolic standpoint and for the patient's convenience, protamine insulin is obligatory in severe diabetes. Since the duration of its effectiveness is 24 hours or more, protamine insulin may be administrated at any suitable hour once daily and the dosage is increased until a normal fasting blood sugar is obtained. Once such value is secured, regardless of glycosuria, the protamine dosage cannot be increased for further increases may cause severe reactions during the night. In actual fact, there usually is heavy postprandial glycosuria with

fasting normoglycemia under protamine insulin therapy; essentially it converts severe diabetes into moderate or mild diabetes. We then complete the standardization of the patient by employing standard insulin as previously described for such diabetes. Thus the severe diabetic usually requires the two types of insulin: protamine insulin to regulate his endogenous sugar and ketone production and standard insulin to overcome his exogenous postprandial hyperglycemia; proper employment of the two insulins effects full diabetic control.

In summary, the family physician is confronted with the problem of caring for a steadily waxing diabetic population. In broad terms, his therapeutic problem is to forestall premature arteriosclerosis in older patients and to restore carbohydrate tolerance in younger patients. In the writer's judgment these objectives will best be realized under persistent full diabetic control. Such is the goal every physician treating diabetes should strive to attain, and a systematic method for its realization in mild, moderate, and severe diabetes has been presented.

Seale Harris Clinic.

PREVENTION OF PERTUSSIS AS A PUBLIC HEALTH MEASURE

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And
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Of all the infectious diseases of childhood that occur in epidemic form, perhaps none is more important from the point of view of both morbidity and mortality than whooping cough.[1]

Pertussis causes more deaths in the first two years of life than measles, diphtheria, poliomyelitis and scarlet fever combined. In 1942 in Jefferson County there were twenty-two deaths from pertussis, while the combined deaths from the other four diseases were four. In 1943 the deaths from pertussis were eighteen and the combined deaths from the other four diseases, six. If the truth were known, if accurate figures could be compiled, it is safe to say that the actual mortality from this disease is four or five times as large as figures quoted. The disease has a decidedly weakening effect on young patients and renders them an easy prey to other infections.

The average number of resident deaths from pertussis for the five-year period 1938-1942 was fourteen, the death rate being 2.9.

The accompanying chart gives a picture of the cases and deaths of the five diseases in Birmingham and Jefferson County for the years 1942 and 1943.

CASES AND DEATHS
CERTAIN DISEASES
BIRMINGHAM AND JEFFERSON COUNTY
1942 AND 1943

	Birmingham				Jefferson County			
	1942		1943		1942		1943	
Disease	Cases Reported	Deaths	Cases Reported	Deaths	Cases Reported	Deaths	Cases Reported	Deaths
Pertussis	133	10	89	8	270	22	130	18
Measles	95	1	302	2	130	1	448	2
Scarlet Fever	143	0	90	0	223	0	140	0
Diphtheria	26	0	17	1	61	1	44	3
Poliomyelitis	2	1	6	1	5	2	8	1

Lurie and Levy say that early attacks of pertussis may produce structural changes in the brain, which, many years later, may lead to serious behavior problems, intellectual deterioration, personality distortions and psychotic manifestations.[2]

Since pertussis causes such serious after effects, as well as deaths, and inasmuch as it is generally conceded that pertussis control by quarantine is impractical, infection having occurred by the time diagnosis is made, then other measures are necessary. Why not prevention?

1. Fox, Max J., and Knott, Elizabeth M.: Whooping Cough Mortality, J. Pediat. 24: 671-674 (June) '44.

2. Lurie, L. A., and Levy, S.: Personality Changes and Behavior Disorders of Children Following Pertussis; Report Based on Study of 500 Problem Children, J. A. M. A. 120: 890-894 (Nov. 21) '42.

The following is a report of pertussis immunizations as given in Birmingham and Jefferson County.

In August of 1941 a bottle of pertussis vaccine was given to each of the several Health Centers in Jefferson County with the idea that the cost of the protective agent to each patient would be one dollar. The nurses working in the Centers and surrounding community had first to be sold on the value of the vaccine and they in turn sold the people in the community. Lay groups in the community were educated to the value of prevention of the disease and sponsored the movement by paying for the biologic for those who could not afford the small fee. Enough children were given the vaccine and with such satisfactory results that the Jefferson County Health Department is now buying the agent in large amounts so that the cost to each patient is only fifty cents instead of a dollar, but where this cost is prohibitive the child is given the vaccine free. Parents require very little urging to give their children the protection offered.

Recently, a study was made to determine the value of the pertussis vaccine given. Five hundred inquiries were sent out to parents whose children had had the vaccine from three months to three years. These inquiries elicited the following information: Date vaccinated against whooping cough. Has your child been directly exposed to whooping cough? If so, when? Was the exposure in the home? In the school? Did the child have the disease following the exposure? If so, was it a light case? Two hundred fifty-seven (257) inquiries were returned with the following results: 199 have not had pertussis with no known exposure; 41 have not had pertussis but with known exposure; 2 were exposed and had suspicious cases; 14 did have whooping cough—7 light cases, 7 not light; 1 dead, not whooping cough.

According to a study made in Evanston, Ill., where large scale studies of pertussis vaccination have been carried on since 1934, the Evanston Board of Health reports only twenty failures (1.26 per cent) in a total of 1585. These children were inoculated with pertussis vaccine (Sauer) in the period 1934-1939.

According to the study made by Dr. Lewis W. Sauer and Dr. Winston H. Tucker, and reported to the Chicago Pediatric Society February 15, 1944, the immunity was not as high after the administration of mixed diphtheria toxoid and pertussis vaccine as when the vaccines had been injected separately. Sauer's conclusion, that 90,000 million bacilli represent an effective pertussis immunizing dose, is shared by other workers.

The first vaccine used in Jefferson County was Parke, Davis (Sauer's). The vaccine being used for the last year and a half is Gilliland Modified Whooping Cough Bacterin which contains 15,000 million killed organisms per cc. Six cc. are given to each child, the first dose being 1 cc.; the second, 2 cc.; and the third, 3 cc., given at monthly intervals. This gives a total of 90,000 million killed organisms. The mothers are advised that the vaccine should be administered at five months of age since babies have no natural immunity to pertussis.

This study, though small, gives an idea of the effectiveness of the agent and also at what a small cost to the patient and the organization it may be given.

Pigmented Moles—I should like to say a word about the treatment of pigmented moles. . . . There is a difference of opinion between surgeons and dermatologists about the way these lesions should be handled. It is a common practice for dermatologists throughout the country to remove them by electrocoagulation, or some similar process. We know from experience that at least 25 per cent of malignant melanomas of the skin develop in preexisting pigmented moles, and that in a goodly proportion of them the mole was traumatized beforehand by patient or doctor. We feel therefore that any method of removing a pigmented mole which traumatises it and fails to remove all of it is a potentially hazardous procedure. Only surgical excision can guarantee to remove all of the mole cells, and we believe that that is the only method which should be used. What moles ought to be removed? We feel that a flat mole does not get traumatized and need not be touched. There are many elevated moles in situations where they are not subject to trauma and these also we let alone. But we do advise the removal of elevated moles in situations where they are frequently traumatized or irritated. The excision should be carried out by a surgeon who will go wide of the mole and who understands the principles of plastic repair so as to avoid unsightly scarring.—*Stout, Texas State J. Med., November '44.*

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DIGITALIS IN CORONARY ARTERIAL DISEASE

"A wide difference of opinion exists among physicians relative to the use of digitalis in coronary arterial disease. At one extreme are those who decry the use of digitalis under any circumstances while at the other extreme are those who administer the drug as a part of a routine procedure. These radical therapeutic philosophies, regardless of their merits, are of less interest than the countless individual philosophies that occur between these paradoxic views. As many of these individual opinions are analyzed, it soon becomes evident that they are in reality only opinions and are not based on correlated experience or on available experimental evidence. Furthermore, the individual physician is likely to alter the therapeutic program under almost identical circumstances. It may therefore be concluded that much confusion exists in the minds of physicians regarding this very important therapeutic problem. Surely somewhere between these divergent philosophies a reasonably correct set of indications and contraindications for the use of digitalis in coronary arterial disease may be found."

Thus does Willius[1] state the case in the opening paragraph of his excellent article dealing with this subject. The Rochester clinician then goes on to discuss the various claims, both experimental and clinical, advanced by each side, which, for reasons of space, cannot be touched upon here. And then he gives us his conclusions which are as follows: "The presence of congestive heart failure or evidence of its imminent supervention constitutes the chief indications for digitalis therapy in coronary arterial disease. Even here the drug must be administered cautiously as it is well to recall that patients with this form of cardiopathy are less tolerant to digitalis than are patients with other forms of heart disease. Unless the onset of the failure is precipitous and severe, it seems justifiable, from abundant clinical experience, to resort to complete rest and the use of the mercurial diuretics before hastening to use digitalis. In cases in which cardiac function has been restored to the point of permitting a restricted ambulatory mode of life, the regular intermittent administration of digitalis for protracted periods of time is commendable. However, the use of digitalis should always be cautious and carried out under strict supervision so that any symptoms and signs of intolerance may be readily detected and the necessary countermeasures taken."

Contraindications to digitalis, according to Dr. Willius, are as follows:

"1. The anginal syndrome of coronary disease without previous or existent congestive heart failure. Toxic doses and, in certain cases, even average doses of digitalis are capable of causing the painful seizures to occur more frequently and with less provocation.

"2. Coronary occlusion with acute infarction of the myocardium but unaccompanied by congestive heart failure.

"3. Healed infarction of the myocardium without previous or existent congestive heart failure.

"4. Coronary sclerosis with impairment of ventricular conduction . . . without previous or existent congestive heart failure.

"5. The mere suspicion of disease of the coronary arteries. . . ."

1. Willius, Frederick A.: The Controversial Issue of the Use of Digitalis in Coronary Arterial Disease, M. Clin. North America 28: 905 (July) 1944.

Willius has dealt well with a difficult and involved subject and is to be commended for attempting to bring order out of a situation marked by so much chaos. The problem of how best to deal with coronary arterial disease is always a difficult one and with which the profession is being increasingly confronted. And it is by means of studies such as those of Willius that some progress is being made.

STATE DEPARTMENT OF HEALTH

BUREAU OF ADMINISTRATION

B. F. Austin, M. D.
State Health Officer

POSTWAR PLANS FOR HEALTH

A brave new world is to come with the end of the war, we are told. It will be a world free from war and the threat of war. The dark shadow of dictators and global trouble-bringers will be wiped out by the bright sunlight of national security and a stabilization of frontiers. Our radios will have more time for music and entertainment and less for speculation regarding the time and place of the next tragic blow. The added strain of doing one's own work and also the work, or a good part of it, of a former fellow-worker now in uniform will be relieved. The months and years of anxiety, of listening for the footstep of a messenger of bad news, will come to an end. A ten-year nightmare will be succeeded by peaceful slumber and calm waking moments.

The brave, happier postwar world will, it is hoped, also be a world of higher standards of living. There is reason to believe that the working man will be able to enjoy more of the good things of life as the fruit of his toil, and the spectre of economic insecurity will be at least partially removed. Many advantages and conveniences formerly regarded as the exclusive privilege of the wealthy few will likewise be the undisputed right of any man or woman willing to make a reasonable effort to obtain them.

That happier postwar world will also contain innumerable comforts and pleasures given it by the inventive genius of the American man and woman of science. Automobiles giving engine performance far outdistancing anything now in use will be commonplace, we are assured. The world's map will be telescoped by the magic power of the airplane, bringing any spot on earth within three and one-half days of any other spot you might name. Our busses and trains will be models of luxury. By making mass travel as much of an actuality as mass production, the cost of visiting the near and distant places of the earth will be greatly lowered and thus brought within reach of almost the poorest of us. The average person will no longer have his mental vision circumscribed by the limits of his own county, state or nation but will be, in very essence, a citizen of the world and a sharer in its global achievements and problems.

As we contemplate that postwar world, free from so many unpleasant things and crowded with so many things that will make life easier and happier, we should not lose sight of the promise of better health for all our people. We are already receiving a foretaste of that better world of health as we read the newspapers and listen to our radios. Remarkable discoveries are being made and tested out on and behind the battlefields. The sulfa drugs, penicillin, and many other miracles of medicine are being prepared for the saving of life among the civilian population after peace comes, just as they are now performing their miracles among the sick and wounded members of the armed services.

It goes without saying that public health will make its peculiar contribution to that medically happier postwar world. The U. S. Public Health Service, your State Department of Health, your county health department and the other public health agencies, most of which are now carrying on their normal functions under grave difficulties, are making plans to give society as a whole the benefit of the latest advances in the field of disease prevention.

As the State Health Officer pointed out at a recent conference of Alabama public health workers, the first objective of the State Department of Health after the war will be the restoration to full strength of

those activities which it has been necessary to curtail or discontinue entirely because of personnel shortages. Then will come a program of expansion, based in part upon plans that were made but not executed before the war and in part upon new concepts of the State's public health responsibility to its citizens which have developed, and will continue to develop, during the war.

One of the activities which will certainly receive considerable impetus as soon as additional personnel and facilities become available is that having to do with the control of the venereal diseases. Public health agencies are determined that the country's experience with these diseases after the first World War will not be repeated this time. Soon after the Armistice which brought that earlier conflict to a close, public interest in this problem, which had been kept at a high level during the mobilization period, decreased markedly. Appropriations that formerly were most generous were drastically reduced, bringing a corresponding reduction in the intensity of the campaign against these enemies of good soldiership and of good citizenship. Unfortunately, the public seemed to have the idea that venereal disease control was strictly, or at least largely, a wartime problem and that the need for it had passed out of the picture when Johnny Doughboy became John Citizen in civilian clothes. The result was of course a sharp upswing in the prevalence of these diseases and the undoing of a great part of the control work which had proved so effective during the war. Now, however, there is a determination not to permit any banking of the fires in this fight in either peace or war. The approximately 196 venereal disease clinics now in operation in this State will undoubtedly increase, rather than diminish. Greater use will undoubtedly be made of the drugs which were unknown at the end of the first World War. The law passed by the 1943 Legislature requiring the blood-testing for syphilis of every resident of the State between fourteen and fifty years of age, with a few minor exceptions, is giving the public health agencies a clear picture of the syphilis problem as it actually exists here, the first they have ever had. The time, therefore, is within sight when we shall know who has and who does not have that disease. With this knowledge will come a determination on the part of those agencies to take the necessary second step in syphilis control—the cure of the infected, their elimination as potential spreaders of the disease, and the restoration of whatever part of their earning capacity that may have been destroyed by the invading disease germs.

Another field which will undoubtedly receive considerably more attention in the postwar period than ever before, both in Alabama and throughout the nation, is that of tuberculosis control. This disease shares with syphilis the questionable distinction of ranking above all others as a major health problem in this State.

At the present time there are in Alabama eight district and county tuberculosis sanatoria maintained with public funds and open to all residents of the State who may be in need of their facilities. These institutions' approximately 500 beds are insufficient to provide immediate care for all those needing it, and, as a result, a person developing tuberculosis usually is obliged to wait several weeks or months before there is a vacancy for him. Under conditions prevailing in most homes it is all but impossible for the patient to receive anything like proper care at home, and of course, if his case calls for such procedures as artificial pneumothorax or thoracoplasty, home care is totally inadequate, unless he is fortunate enough to be under the care of one of the relatively few physicians equipped to carry out these procedures. It is obvious, therefore, that a long wait for admission to institutional care involves a serious danger and is likely to result in the patient's being in worse condition when admitted than when diagnosed. To remedy this situation as far as possible, plans are already drawn for the building of additional sanatoria which will furnish sufficient beds to provide at least an approximation of what tuberculosis authorities regard as a safe minimum for a state of Alabama's population. The Federal Government is also becoming more active in the tuberculosis control field and is expected to provide substantial financial and technical assistance to the various states.

One of the tragedies of our time is the death of thousands of women as a result of conditions associated with pregnancy and childbirth. Provisional vital statistics reports show that in 1943 no fewer than 296

women succumbed to this condition in Alabama alone, an average of approximately one such death every 30 hours. When we consider that two-thirds of these deaths are believed to be preventable and would not occur if mothers were able to receive the proper medical and nursing care and supervision before, during and after the birth of their babies, it is easy to understand why public health authorities are so deeply interested in this fruitful field of service to humanity.

Closely allied with the saving of mothers' lives is the saving of the lives of young babies, because the conditions which produce maternal mortality are often also those which adversely affect infant mortality. The same prenatal care which greatly enhances the mother's chance of avoiding complications and coming through the ordeal of lifegiving with unimpaired health will contribute wonderfully to the baby's chance of being physically normal, with sufficient resistance to survive the peculiar disease enemies of babyhood. Such care certainly will make it more likely that the mother will experience a normal, full-term pregnancy and avoid imposing upon her offspring, however unwillingly, the severe handicap of prematurity, by far the greatest single cause of death among young babies. Proper care of the mother at childbirth means that the child, as well as the mother, will receive expert attention should a crisis arise at that time. It means too that the danger of being injured at birth, also a major cause of death among the very young, is greatly diminished. And postnatal care of the mother does much to increase her ability to have healthy babies in the future.

But the science of pediatrics would be an important one, even if the health of the mother were not involved. Young children face definite health hazards as peculiar to them as certain occupational diseases are to workers in dusty trades, physicians or dentists. During those fleeting years of babyhood health habits are formed and health foundations are laid for a lifetime. The wisdom of getting a good start for a successful race points to the importance of giving young Alabamians and young Americans generally the best health protection it is possible for them to receive. In the light of that great need, the State Department of Health and other public health agencies will certainly pay as much attention as they can in the postwar world to the protection of young people against their health enemies.

Other forms of public health protection will also receive more attention in that happier postwar period than ever before. Briefly, they include the curbing of malaria, hookworm and other insect-borne and filth-borne diseases, completion of the conquest of typhoid fever, still a menace in our rural districts, expanded programs of health education, increased laboratory facilities for the benefit of the State's physicians and, through them, the people as a whole, an increase in the number of diagnostic and treatment clinics for cancer victims, and the rebuilding to and beyond their prewar strength of the 67 county health departments, which have suffered serious personnel losses during the war period.

In short, your State Department of Health and Alabama's other public health agencies will endeavor during the postwar period to live up in every way to the added responsibilities that will be placed upon them with the coming of the peace. Our people will demand better health conditions as one of the good things which that peace will bring. The writer urges all Alabamians, of high and lowly estate, to cooperate fully with these agencies in their efforts to measure up to these newer and greater responsibilities, for the greater health and happiness of all.

BUREAU OF LABORATORIES

Samuel R. Damon, Ph. D., Director

SPECIMENS EXAMINED

SEPTEMBER 1944

Examination for diphtheria bacilli and Vincent's	316
Agglutination tests (typhoid, Brill's, undulant fever)	309
Typhoid cultures (blood, feces and urine)	333
Examinations for malaria	329
Examinations for intestinal parasites	848
Serologic tests for syphilis (blood and spinal fluid)	15,663
Darkfield examinations	5
Examinations for gonococci	731
Examinations for tubercle bacilli	435
Examinations for Negri bodies (microscopic)	3
Water examinations (bacteriologic)	208
Milk examinations	274
Miscellaneous	286
Total	19,740

OCTOBER 1944

Examination for diphtheria bacilli and Vincent's	595
Agglutination tests (typhoid, Brill's, undulant fever)	203
Typhoid cultures (blood, feces and urine)	195
Examinations for malaria	290
Examinations for intestinal parasites	754
Serologic tests for syphilis (blood and spinal fluid)	15,754
Darkfield examinations	2
Examinations for gonococci	612
Examinations for tubercle bacilli	333
Examinations for Negri bodies (microscopic)	5
Water examinations (bacteriologic)	216
Milk examinations	348
Miscellaneous	58
Total	19,365

PROCEDURE DISCONTINUED

Pneumococcus typing has been discontinued by the laboratories of the State Department of Health. This action is dictated by the infrequent use of the service by the physicians, due, no doubt, to the very general use of chemotherapy in place of serum treatment in pneumococcus infections.

BUREAU OF PREVENTABLE DISEASES

D. G. Gill, M. D., Director

PREVALENCE OF COMMUNICABLE DISEASES IN ALABAMA

1944

	Aug.	Sept.	E. E.* Sept.
Typhoid	18	125	47
Typhus	144	161	43
Malaria	321	642	1213
Smallpox	1	0	0
Measles	14	9	28
Scarlet fever	41	99	74
Whooping cough	60	66	66
Diphtheria	56	121	115
Influenza	24	35	76
Mumps	58	46	23
Poliomyelitis	24	17	7
Encephalitis	1	2	2
Chickenpox	2	4	6
Tetanus	4	6	5
Tuberculosis	266	201	229
Pellagra	6	4	17
Meningitis	23	12	5
Pneumonia	136	105	78
Trachoma	0	1	0
Tularemia	0	0	0
Undulant fever	2	9	6
Dengue	0	0	0
Amebic dysentery	6	10	0
Cancer	194	229	0
Rabies—Human cases	0	0	0
Positive animal heads	20	27	

As reported by physicians and including deaths not reported as cases.
*E. E.—The estimated expectancy represents the median incidence of the past nine years.

BUREAU OF SANITATION

T. H. Milford, M. S. in S. E., Director

STREAM IMPROVEMENT—A POSTWAR PROBLEM

All indications are that stream improvement will be a major postwar problem in Alabama and other states.

For many years representatives of the Alabama State Health Department have realized the need for water pollutional laws and went so far as to draft an act for submission to the Alabama legislature about seventeen years ago. After due consideration the draft was not submitted as it was realized that this State was largely rural and relatively undeveloped industrially. Industries of many types were being induced to locate within the State.

To force industry to treat its waste under state legislation would probably drive it from our borders to other states where there are no operating stream pollution laws. The results of local state legislation (if enforced) without similar uniform legislation throughout the country could be disastrous.

The Alabama State Health Department now endorses in principal certain federal-state cooperative types of water pollution control. While there is little likelihood of enactment of national legislation relating to such control for the period of the national emergency, it is the opinion of this department that after the war a renewal of legislative activities may bring about enactment of legislation setting up control and regulation.

Congress has been interested in the problem of water pollution, particularly for the past eight years, as evidenced by the fact that possibly thirty or forty bills dealing in some way with water control were introduced during this time in both Houses of Congress.

The following abstracts of the Mundt Bill (HR 3778), March 4, 1941, and the Spence Bill (HR 4741), May 3, 1944, which indicate the nature of legislation that might be expected after the war, are provided by The National Council for Stream Improvement (of the Pulp, Paper and Paperboard Industries) Incorporated:

SUMMARY OF MUNDT BILL H. R. 3778, MARCH 4, 1941

"The Water Pollution Act creates within the U. S. Public Health Service a Division

of Water Pollution and Control, and provides that the division shall fix standards of purity, establish minimum treatment requirements and make regulations regarding discharges into streams, and declares violation of these standards fixed by the division to be a common nuisance preventable or abatable upon demand of the Surgeon General by equity proceeding brought by the United States Attorney in the appropriate district. In the event that compliance with the division's standards is not accomplished within two years, the division may extend the time to not over five years, if the industry involved proves that no adequate method is presently known; and if at the end of the extended period the industry can prove that it has made diligent effort without result to solve the problem, further extensions may be granted.

"The bill also has a provision that compliance with the standards set by the division and actions to force such compliance shall be suspended for the duration on certification of the Secretary of War or Navy that such proceedings or compliance would have a deleterious effect on the war effort."

SUMMARY OF SPENCE BILL H. R. 4741, MAY 3, 1944

"A revised Spence Bill was referred to the Committee on Rivers and Harbors recommending the following: That there be established in the U. S. P. H. S. a Water Pollution Control Advisory Board whose members shall be as follows:

"1. The Surgeon General or a Sanitary Engineer designated by him.

"2. Chief of Engineers, United States Army or a member of the Corps of Engineers designated by him.

"3. Director, United States Fish and Wildlife Service.

"4. A person active in stream pollution control work who is not an officer or employee of the Federal Government.

"5. A person having active interest in wildlife and conservation.

"The duties of this board shall be to review the policies and program of the U. S. P. H. S. undertaken under this act.

"The Sanitary Engineering Division of the U. S. P. H. S. would be provided with an appropriation of $500,000 to carry on investigations, surveys and studies pertaining to any specific water pollution problem upon request of any state, drainage basin authority, community, municipality, or industrial plant, subject to approval of the Surgeon General with the purpose in mind of affecting a solution of such problems. The division would make definite recommendations for the correction and elimination of any deleterious conditions found to exist and take an active part in advanced planning of abatement programs.

"An appropriation providing for $1,500,000 is to be allotted to state health departments for promotion of investigations, surveys and studies in prevention and control of water pollution. Part of these monies would be, at the Surgeon General's discretion, allocated to state health departments to be used as grants-in-aid for the preparation of engineering reports, plans and specifications.

"Provision would also be made for grants-in-aid loans to states, municipalities, or any public body in an appropriation of $50,000,000. Such loans would cover engineering reports, plans, specifications, construction and operation of sewage treatment works and would be disbursed by the Administrator of the Federal Securities Administration on certification by the state health authority and recommendation of the Surgeon General's office. It is specified that grants not exceeding 50 per cent of the cost of the project shall be given, that the rate of interest on loans be set by the President on recommendation of the Secretary of the Treasury, and that the term of loans should not exceed ten years. Loans to industries would be subject to the same stipulations as these grants-in-aid loans made to public bodies. Estimates of construction and operating cost are to be prepared by the Surgeon General's office to insure adequacy of loans to meet requirements and order and priority of projects shall be determined in accordance with estimated importance in eliminating or reducing pollution."

Uterine Displacement—With increasing frequency during recent years I have found that young women who came for examination because of menstrual disorders, backache, headache, dysuria, and other complaints attributable to pelvic disorder have had an operation for displaced uterus. Unfortunately the symptoms persist in some women postoperatively, and not always but all too often the symptoms and complaints are more marked. A retrodisplaced, freely movable uterus, unassociated with any pelvic lesion, seldom causes symptoms sufficient to justify operative treatment.—*Greene, J. M. A. Georgia, October '44.*

BUREAU OF VITAL STATISTICS

Ethel R. Hawley, Acting Director

PROVISIONAL MORTALITY STATISTICS

REPORTED BIRTHS, STILLBIRTHS, DEATHS FROM CERTAIN IMPORTANT CAUSES AND RATES*— ALABAMA AUGUST 1944, 1943, 1942

Births, Stillbirths, and Causes of Death	Number of Deaths Registered—August 1944			Rate (Annual Basis)		
	White	Colored	Total	1944	1943	1942
Births—(exclusive of stillbirths)	**	**	6499	26.5	29.6	26.5
Stillbirths	**	**	175	26.2	28.2	30.3
Deaths (exclusive of stillbirths)	999	831	1830	7.5	8.2	7.7
Infant deaths:						
Under one year	151	104	255	39.2	42.5	41.4
Under one month	89	62	151	23.2	27.3	27.0
Typhoid and paratyphoid 1, 2	3		3	1.2	0.8	0.8
Epidemic cerebrospinal meningitis 6	2	1	3	1.2	1.2	1.2
Scarlet fever 8						0.4
Whooping cough 9	2	5	7	2.8	3.2	4.1
Diphtheria 10	1	2	3	1.2	0.8	0.4
Tuberculosis, all forms 13-22	37	73	110	44.9	37.8	37.4
Malaria 28	2	4	6	2.4	3.7	6.1
Syphilis 30	7	19	26	10.6	10.6	9.4
Influenza 33	4	3	7	2.8	7.3	2.4
Measles 35	1		1	0.4		0.4
Poliomyelitis 36		2	2	0.8	1.2	2.8
Encephalitis 37						
Typhus fever 39	2	1	3	1.2	0.8	
Cancer, all forms 45-55	105	61	166	67.7	58.2	52.8
Diabetes mellitus 61	10	12	22	9.0	8.5	9.8
Pellagra 69	1	1	2	0.8	3.7	4.5
Alcoholism 77	1		1	0.4	1.6	1.6
Intracranial lesions 83	95	67	162	66.1	65.5	63.8
Diseases of the heart 90-95	208	133	341	139.1	150.9	143.9
Diseases of the arteries 96-99	13	5	18	7.3	6.5	7.7
Bronchitis 106	1	1	2	0.8	1.6	0.4
Pneumonia, all forms 107-109	31	27	58	23.7	35.8	28.0
Diarrhea and enteritis (under two) 119	32	20	52	21.2	15.5	12.6
Diarrhea and enteritis (two and over) 120	3	5	8	3.3	2.8	4.9
Appendicitis 121	11	4	15	6.1	6.9	4.9
Hernia, intestinal obstruction 122	10	5	15	6.1	9.4	8.9
Cirrhosis of the liver 124	4	6	10	4.1	4.1	2.8
Nephritis, all forms 130-132	59	73	132	53.8	58.2	62.6
Diseases of the puerperal state 140-150	7	12	19	28.5	33.3	35.6
Puerperal septicemia 140, 142a, 147	2	2	4	6.0	9.3	10.4
Suicide 163-164	7	1	8	3.3	5.3	6.1
Homicide 165-168	4	16	20	8.2	16.7	16.3
Accidental deaths (exclusive of motor vehicle) 169, 171-195	73	43	116	47.3	57.4	45.1
Motor vehicle 170	33	10	43	17.5	13.8	15.4
All other known causes	185	109	294	119.9	153.0	134.2
Ill-defined and unknown causes 199-200	45	110	155	63.2	71.2	69.1

**Not available.
*Birth and death rates per 1,000 population; infant death rate per 1,000 live births; stillbirths per 1,000 total births (inclusive of stillbirths); from specific cause per 100,000 population; from puerperal causes, per 10,000 total births.

Local Responsibility in Public Health Administration—It is very easy for those of us who have had to contend against the old-time penuriousness in public health expenditures to become overly enthusiastic about grants-in-aid. But already state health officers are rumoring that formerly self-reliant communities are substituting these grants for tax funds previously levied for support of many local health activities in order to divert such tax funds to other purposes; that other communities threaten to discontinue proven, needed activities if grants-in-aid are not forthcoming; that still others are demanding these grants, not as a need, but as a right.

There is evidence that in some communities these grants are encouraging public health patterns much too large for the cloth and in excess of the community needs and resources. There is also the attendant danger that because of their source, local taxpayers feel no concern as to the manner in which they are expended, a fact which may lead to extravagances and waste, discrediting the wisdom of all public health expenditures and the business prudence of health officials. We as friends of public health progress must insure that a grant-in-aid shall be used only as a gentle stimulant and not as a narcotic which soothes its victim to complacency and contentment while its effects last, and sends him into collapse when it is withdrawn.

That, thus far in the dispensing of these grants, there has been no grave evidence of usurpation or obnoxious autocratic direction of local health activities, has been due to the integrity and sincerity of federal and state officials who administer them. It must be remembered however that present policies may fluctuate and in this fluctuation there is inherent danger. The power to give implies the power to take away. If we in local communities permit ourselves to become so wholly reliant upon these grants that withdrawal of them means catastrophe to our cause, it means that we may yield to centralized bureaucratic control. While this may be for our betterment, it is repugnant to our democratic ideas and ideals.

Much depends therefore on the degree to which we permit our communities to become dependent upon these grants. They do not depend upon them for support of their public schools or fire and police departments. Is protection of the public health a lesser responsibility? Our public health education can be regarded as failure if it cannot teach our people the value of community supported and controlled local health activities which meet their wishes and supply their needs. Neither individuals nor communities can continue to accept unwarranted contributions without sacrifice of character. We too much anticipate the possibilities of ultimate readjustment and reconversion.—*Sippy, Am. J. Pub. Health, Nov. '44.*

"The control of syphilis and gonorrhea is a problem which, at this moment, presents a very special challenge to the health administration. New discoveries open up dazzling prospects of advance; but our hopes are modified by certain serious doubts and qualifications. Statistical results give evidence of tangible achievement."

AMERICAN MEDICAL ASSOCIATION NEWS

FIND PENICILLIN NOT EFFECTIVE AGAINST RHEUMATOID ARTHRITIS

The hope that penicillin might prove effective against rheumatoid arthritis appears to be futile. Results obtained from the treatment of 10 soldiers with early but progressive rheumatoid arthritis indicate that the drug is of no value for this disease, offer no support to the idea that it is caused by hemolytic streptococci and lead to the assumption that rheumatoid arthritis is not caused by any of the bacteria which are already known to be rapidly affected by penicillin, Lieutenant Colonel Philip S. Hench, Medical Corps, Army of the United States, reports in The Journal of the American Medical Association for November 23.

"Our clinical results from penicillin . . . were essentially negative," he says. "In 7 of the 10 cases there was no significant subjective or objective improvement. One patient felt worse but did not appear to be in worse condition than before treatment. In 1 case there was slight subjective, but no definite objective, improvement. One patient experienced moderate objective and subjective improvement in some, but not in all, his affected joints; the sedimentation rate increased slightly during treatment, and he was by no means cured or even decidedly improved. In view of the capricious nature of rheumatoid arthritis the improvement in these 2 cases must be regarded as unrelated to the penicillin."

By sedimentation rate is meant the rate at which red cells sink in a mass of drawn blood. An increase in the rate is indicative of the presence in the patient of an infection.

Colonel Hench explains that the cause of rheumatoid arthritis is unknown and that "of the many impressions regarding its cause, the microbic hypothesis is still the most widely accepted and, of the many different bacteria which have been incriminated, hemolytic streptococci have been, since 1929, most under suspicion.

"Hemolytic streptococci from time to time have been recovered from the synovial fluid and blood, from foci of infection and occasionally from synovial membrane, bone and lymph nodes of patients with rheumatoid arthritis. The blood of the majority of patients who have this disease contains antibodies against hemolytic streptococci. . . ."

He points out that because many patients with unmistakable rheumatoid arthritis do not present such evidence, the hypothesis that it is caused by hemolytic streptococci has remained presumptive only.

"Ever since it was announced that penicillin was extremely effective against a variety of infectious agents, including hemolytic streptococci," Colonel Hench says, "many physicians and a host of rheumatic patients have been hopefully awaiting news that penicillin might prove effective against rheumatoid arthritis. True, the sulfonamides, also effective against hemolytic streptococci, have proved useless against this disease. But it was hoped that penicillin might somehow prove to have power superior to sulfonamides against hemolytic streptococci or, if hemolytic streptococci were not the cause of rheumatoid arthritis, perhaps penicillin might kill the 'undiscovered germ' of the disease. Hence, even though we never had accepted hemolytic streptococci as the cause, we were pleased when the War Department and the Surgeon General's Office authorized the staff of the Rheumatism Center of the Army at the Army and Navy General Hospital, Hot Springs, Ark., to give penicillin a clinical trial in rheumatoid arthritis.

"The only cases chosen for trial for treatment with penicillin were those in which the disease had advanced far enough to be diagnostically unmistakable but not far enough to have produced irreversible changes (destruction of cartilage and subchondral bone, notable flexion deformities), the presence of which might have made this a clear cut evaluation of results.

"We decided to give penicillin long enough and in large enough doses so that, were our results negative, it could not well be said that our patients had not received sufficient amounts of the material.

"Ten patients have been treated intensively. All were male soldiers recently on active duty. Their ages were from 23 to 45 (average 30) years. Eight of the patients

never had had the disease prior to active duty. Two of the patients had had the disease mildly in civilian life. . . . Excluding the disease from which these 2 patients had suffered before they entered military service, the 10 patients had been ill from two to eighteen months, an average of 7.4 months. Thus, their disease was in a fairly early stage.

"The symptoms were characteristic of rheumatoid arthritis: aching, soreness, stiffness and 'jelling' of joints and muscles; weakness, fatigue, malaise, loss of appetite and some loss of weight and, finally, hyperhydrosis of the extremities. Five of the patients walked with a limp; 1 was temporarily bedridden. Before they had come to this hospital, the patients had been treated with salicylates, rest, vitamins, sulfonamides (no effect) and the removal of tonsils (2 cases) and teeth. . . ."

The patients were given large doses of penicillin intramuscularly every three hours day and night. The daily doses of penicillin were from 120,000 to 320,000 Oxford units; total doses were from 1,800,000 to 3,250,000 units within fourteen to twenty days.

"Such large doses," Colonel Hench says, "are known to be adequate, indeed perhaps more than adequate against severe infections . . . from hemolytic streptococci, Staphylococcus aureus and so forth. . . .

"Definite improvement in appetite was noted by 6 of the 10 patients. It may have been unrelated to treatment with penicillin or it may have been a general side effect thereof. . . ."

In conclusion Colonel Hench says that "From these negative results we would conclude that penicillin probably should not be used for the further clinical treatment of rheumatoid arthritis, at least until the material is available in something approaching inexhaustible quantities. Further researches with penicillin in rheumatoid arthritis may be in order. At present the limited supplies available for clinical use should be allotted for the treatment of patients with diseases in which curative results are more likely to eventuate than in rheumatoid arthritis.".

VITAMIN SUPPLEMENTS ARE FOUND OF NO VALUE FOR NORMAL PERSONS

"Administration of vitamin supplements to a group of apparently normal persons, consuming the usual American diet, had no demonstrable beneficial effect," Julian M. Ruffin, M. D., and David Cayer, M. D., Durham, N. C., report in The Journal of the American Medical Association for November 25. The study was conducted at the Duke University School of Medicine at the request of the Office of the Quartermaster General, U. S. Army. Volunteer medical students and technicians were used as subjects.

"Our purpose in this study," the two physicians say, "was to obtain impartial and intelligent daily records of the effect of various vitamin supplements on apparently normal persons. It was felt that in such a study medical students would be not only cooperative but critical as well. The duration of the experiment was set arbitrarily at thirty days. In our experience, patients having frank (vitamin) deficiencies recover rapidly when specific therapy is instituted. It is reasonable to assume that a subclinical deficiency should respond just as promptly to treatment, and therefore it was felt that nothing would be gained by prolonging the experiment.

"All of the subjects were consuming the usual American diet and apparently were in good health. Before beginning the experiment 20 of them, selected at random, had vitamin studies made, including the determination of carotene, vitamins A and C, nicotinic acid, thiamine hydrochloride, riboflavin, pyridoxine, pantothenic acid and prothrombin time. All of these were within normal limits."

In the introduction to their paper, Drs. Ruffin and Cayer explain that "At the present time the use of vitamins is widespread throughout the country, not only in the treatment of disease, but also by apparently normal persons. While no one would question the employment of vitamin therapy in frank deficiency diseases or even in suspected deficiency states, still one wonders if the indiscriminate use of vitamins, sold over the counter to people who have no obvious disease, is justified. It has been argued that such vague symptoms as weakness, nervousness, fatigability and insomnia can result from a vitamin deficiency and therefore, when such symptoms appear, vitamin therapy should be instituted."

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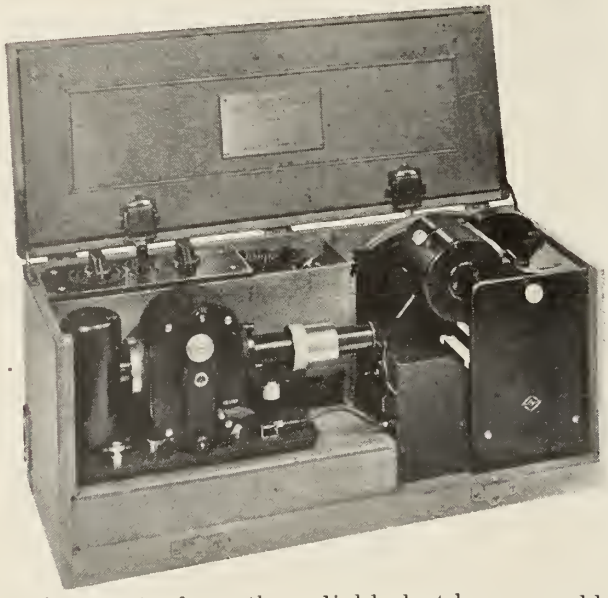

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Miscellany

PHYSICIAN VETERANS' EDUCATION IS PROVIDED FOR BY G. I. BILL

Physician veterans of this war are eligible to obtain graduate education in the postwar period under the provisions of the so-called "G. I. bill," which entitle them to payment of tuition and also a subsistence allowance while taking their courses, a conference with officials of the Veterans Administration has disclosed, it is reported in The Journal of the American Medical Association for November 11.

The information, which, as The Journal points out in the same issue, is of the "greatest importance to all physicians now serving with the armed forces," is contained in a preliminary report of the Subcommittee on Postwar Education of Physician Veterans, of the American Medical Association's Committee on Postwar Medical Services.

The Journal further emphasizes the importance of the report by pointing out that "Preliminary reports on the results of the questionnaire sent by the Committee on Postwar Medical Service to all physicians in the armed forces indicate that the majority

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THE SPASTIC COLON

W. LINDSAY MILLER, M. D., F. A. C. P.
Gadsden, Alabama

In an article on mucous colitis or spastic irritable colon, McGavran[1] writes: "This is not a disease; it is a condition"—and it is as such that we wish to discuss it. As a condition or disease entity, it has been recognized and studied for years. The use of irritating cathartics and enemata has seemed responsible for the condition in many cases. Food fads, with resulting unbalanced or deficient diets, have been found by some investigators to antedate the onset of symptoms; and allergy to foods is undoubtedly responsible for the symptoms in certain allergic individuals. The term unstable colon has been applied to this condition, and we do encounter instability of the colonic function without demonstrable evidence of gross organic lesion of the colon.

In the vast majority of patients we find a nervous, high strung individual, or one who has been laboring under stress or strain. Mental or emotional strain, rather than mere physical strain, seems to be the predisposing factor in our unstable patients. Wakefield[2] finds that "in all cases of functional disorder of the colon there are varying degrees of fatigue, fear, anxiety and a general failure of relaxation."

In these strenuous times we certainly have fear, anxiety, fatigue and a general failure of relaxation affecting those in every walk of life. The mother, with a son overseas and anxious about his welfare and that of his wife and child, is fearful that bad news may come at any time. The young mother, whose husband is in service or expects to be called to service in the near future, is apprehensive of her added responsibility. The young father thinks of the loved ones he will leave behind and wonders if he will be able to provide for them properly if he returns. The older man in industry is on his usual job but working harder and often seven days a week for months on end. The executive, whose plant has switched to a full-time war industry and increased its personnel and operating equipment, does not find time to solve his problems during the 12 or 14 hours of the working day and carries his responsibilities to bed with him. The farmer is called upon to produce more when he is losing his trained helpers and cannot buy equipment that seems essential. The independent business man is plagued by government regulations, inexperienced help and rising taxes.

These are the times that produce functional disorders, and the writer has been impressed with the increased frequency with which cases of the unstable, or the irritable, or the spastic colon are seen in private practice. Kantor[3] finds colonic instability in its various forms "occurring in 30 to 50 percent of patients admitted to the gastro-intestinal service," and this apparently in more or less normal times. One wonders what the percentage would be under present conditions. The cases presented here were seen in the

Read before the Association in annual session, Montgomery, April 18, 1944.

1. McGavran, Chas. W.: The So-Called Mucous Colitis or Spastic Irritable Colon, J. A. M. A. 120: 182-183 (Sept. 19) 1942.

2. Wakefield, E. G.: "Spastic Colitis"; Functional Disorders of the Colon Affecting Young and Middle-Aged Individuals, M. Clin. North America 21: 721-735 (May) '37.

3. Kantor, John L., in Diseases of the Digestive System (Portis), Philadelphia, Lea & Febiger, 1941, p. 769.

short time or until these patients can begin to improve, and can better establish a proper routine of living and realize the nature of their symptoms, is of great help. But all of the last named procedures will be only temporarily helpful if we do not take the time and make an effort to give these sufferers a clear understanding of the whys and wherefores of their condition. Kantor[3] emphasizes what he calls "the three R's" of successful bowel management—"reassurance, relaxation and reeducation."

In summarizing, we have reported the findings in a study of 42 patients presenting the condition known as spastic, irritable, or unstable colon. The increase in the number of patients seen in private practice is shown, and we feel that the stress and strain of present day life is in no small way responsible.

DISCUSSION

Dr. Norman Van Wezel (Montgomery)—Dr. Miller is to be complimented on two matters: first, the fact that he is so generous as to take time out from his busy practice to accumulate and present the facts regarding the irritable colon as he has done this evening; and second, upon presenting a subject which is so very common. We at these meetings have a tendency to present the rarity.

The internist who sees a large number of abdominal complaints is impressed that the spastic colon is the most common form of visceral complaint. As Dr. Miller points out, it goes under numerous names but perhaps colonic neurosis is the best descriptive term. It is caused by an imbalance of the autonomic nervous system. Therefore, spastic colon or irritable colon is but a manifestation of a generalized condition consisting of hypotension, sweating, cold hands, numbness, menstrual irregularity, insomnia and, in general, an anxiety state. It is definitely related to our civilization. Those of us who have both white and Negro practice are impressed with the rarity of this condition in the country Negro. Again, it is seen most commonly in those individuals who are under great tension: and lastly, it is much more common among private cases than among clinic cases.

I am impressed mostly that it is most common during the menopause and I believe, therefore, that an endocrine imbalance plays an important part. More recently I have been doing some calcium studies, believing that the cramps, not only of the intestine but of legs, arms and neck, are probably a mild unrecognized tetany. In the same manner we have recently become cognizant of the mild hypothyroid state and, as Spies points out, we are now beginning to recognize the mild pellagrin. Some of these spastic colons probably fall into a mild tetany. It is too soon yet to report on these studies.

A mention by Dr. Miller of allergy as an etiologic factor is made. My own experience for the past 2 years is that allergy must play a very small part in this manifestation. Those cases of gastrointestinal allergy that I see are usually violent, severe cramps, with pernicious vomiting and diarrhea. The mild, irritable colon is not a part of this picture. Certainly the menopause factor is the most vital and important.

Its treatment by change of environment and occupation, proper rest, and an alteration of the mental outlook perhaps is most successful. Sedatives, local treatment and medications play a part in the immediate correction of this difficulty.

This presentation by Dr. Miller is not intended to be complete. It does, however, serve as an indicator of the type of thought-provoking subjects that should be presented at these meetings.

Medicine in the South Pacific—The practice of medicine among the troops in the South Pacific is concerned with medical problems that arise as the result of the grouping of large numbers of military personnel in areas where diseases indigenous to the tropics are prevalent and where a host of other factors tend to undermine the health and morale of the personnel.

The more important of these latter factors are the unusual temperature and humidity, the strange and unusual surroundings, the depression of distance, and the persistent, aggravating insect life that adds to the general discomfort of the personnel. The process of acclimatization to the heat and humidity of the tropics varies with the individual. The capacity to carry out his duties will depend upon the rapidity and the degree of this acclimatization.

The personnel of a military activity may also develop diseases peculiar to our own civilization. The dangers incident to their occurrence may be enhanced by the usual factors that play a part in the spread of diseases in military camps. Adequate precautions are necessary in order to prevent these diseases from assuming epidemic proportions. Military medicine in the tropics embraces the prevention and the treatment both of diseases peculiar to the tropics and of diseases that may commonly occur as a result of the normal contact of human beings.

The institution of an adequate and a well-supervised sanitary program is the most important single factor in the prevention of tropical diseases. The program must be extensive enough to include the control of all factors that may participate in the causation of diseases in the human being.

The water supply of all activities must be carefully controlled if the water-borne diseases are to be avoided. Sanitary measures designed to render drinking water free of contamination should be instituted immediately on arriving at a camp site. The spread of gastro-enteric diseases through a command may be rapid and disabling if adequate control is not established and maintained.—*McMahon, South. M. J., Jan.* '45.

A DISCUSSION OF ABORTION, SEPTIC AND NONSEPTIC

T. M. BOULWARE, M. D., F. A. C. S.
And
C. D. HOWE, M. D.
Birmingham, Alabama

The various types of abortion often confront any physician who includes obstetrics in his practice. The true significance of the abortion problem may be emphasized by the following statistics from authoritative sources:

1. Thirty to 35 per cent of all maternal deaths are caused by abortion.[1]
2. There is one abortion to every five confinements in rural areas,[2] and one abortion to every two and one-half confinements in urban communities.[3]
3. The average mortality rate for abortion is 1.2 per cent.[3]
4. At least one-half of all abortions are of criminal origin, and at least one-half of all criminal abortions are done by professional abortionists.[3]

Strictly speaking, abortion refers to any termination of pregnancy prior to 16 weeks. To avoid confusion with the term miscarriage, we shall hereafter refer to abortion as any termination prior to viability of the fetus. This usually means 28 weeks.

The etiology of spontaneous abortion may be briefly summarized as follows:

1. *Fetal*
A. Abnormalities of the fertilized ovum
B. Hydramnios
C. Erythroblastosis fetalis
2. *Placental*
A. Defective trophoblastic proliferation
B. Infarcts and tumors
C. Abruptio placenta and placenta previa
3. *Maternal*
A. Endocrine dysfunction
B. Vitamin deficiencies
C. Systemic disease (syphilis, nephritis, diabetes)
D. Pelvic pathology (cervicitis, endometritis. tumors, malformations)
E. Acute infectious disease
F. Trauma and surgical trauma
G. Cyclical uterine irritability

Threatened abortion always presents an uncertain prognosis. In many such cases the cause is not apparent; hence, treatment is somewhat empirical. Many writers report a high incidence of abnormal embryos in studied series of abortion material. If positive knowledge could be had as to the normalcy of the developing embryo, many threatened abortions would be encouraged to abort. In such circumstances, measures would not be instituted to check the abortion. Unfortunately we cannot determine in the threatened stage just which case represents an abnormal pregnancy. Curative efforts may often fail because the pregnancy is dead when the first symptoms of threatened abortion appear. Our treatment of threatened abortion in the early months consists of (1) absolute bed rest with the foot of the bed elevated; (2) no vaginal examinations unless hemorrhage is alarming; (3) a progesterone preparation; (4) vitamin E in large doses; (5) paregoric and a barbiturate but no morphine, and (6) allow the patient to be up if bleeding continues longer than two weeks and examination has ruled out such possible factors as polyps. The actual value of progesterone and vitamin E is open to question. Clinical and experimental evidence is most conflicting. It is positively known, however, that morphine stimulates the muscle fibers of the uterus of early pregnancy. Morphine is thus contraindicated. Inference may be drawn from the about statements that we regard the treatment of threatened abortion with too much pessimism. We do believe that, if certain agents fail after a fair trial, it is best to cease meddlesome efforts to maintain a pregnancy which has an excellent chance of being a blighted one. We may often assist nature but seldom defeat her.

Missed abortion refers to the intrauterine death of the fetus with failure of expulsion of any of the gestational products. The relative size of the uterus determines our own

---

Read before the Birmingham Clinical Club at its May 1944 meeting.

From the Department of Obstetrics of Norwood Hospital.

1. Special Report, Bureau of the Census, July 1942.
2. Plass, E. D.: Questionnaire of 81 Iowa Physicians. (Quoted by Taussig.)
3. Taussig, F. J.: Abortion, Spontaneous and Induced, St. Louis, C. V. Mosby Co., 1936.

treatment of these cases. If the uterus is larger than that of a three month pregnancy, the case is left to nature. If the corpus uteri is smaller than that of a three month pregnancy, it is our custom to observe the case for four more weeks, recheck the Friedman, try large doses of estrogenic hormone followed by fractional doses of pituitrin, and then, if necessary, empty the uterus from below. Fourteen* such cases have been so treated with satisfactory results. Nine* cases beyond the third month were left to nature. It is of some interest to note that two of the fourteen early cases showed definite evidence of hydatidiform degeneration even though the Friedman in both instances was negative.

For all practical purposes the management of inevitable abortion is about the same as that for incomplete abortion. This brings us to the main subject of this paper: the hospital management of incomplete abortion.

An intelligent and rational consideration of any surgical problem presupposes some knowledge of the pathology involved. "In a brief consideration of the pathology of incomplete abortion it is quite evident that the period of gestation will largely determine the pathological picture and probable clinical course."[4] Because of loose attachment of early chorion and deciduae, abortions during the first six weeks of pregnancy are usually complete. During the second six weeks the more differentiated chorion provides a firmer attachment and complete abortion is less likely. Terminations after the fourth month are often followed by retention of the entire placenta. "Soon after fetal expulsion, most of the retained chorionic cells, except those immediately adjacent to maternal sinuses, begin the process of necrosis. If retained sufficiently long this degenerating tissue may eventually lead to fever, foul discharge, and to what has been called sapremia."[4] Continued retention of this tissue also offers an excellent culture medium for normally non-pathogenic bacteria of the vaginal vault and for more virulent microorganisms introduced by examination or instrumentation. A uterus containing such a mass cannot involute properly, and partially exposed maternal sinuses lead to ineffectual thrombosis and continued hemorrhage. Autopsy findings in many cases of puerperal sepsis demonstrate nature's effort to limit spread of infection by throwing up a protective leucocytic barrier. This reaction, typical of many other types of inflammation, is usually limited to the decidual layers. In non-septic abortions this wall is not in evidence, but in true septic abortion we must assume that some such limitation effort is present and should remain intact. Extrauterine extension through broad ligament lymphatics may result in parametritis. Direct blood stream contamination may lead to a rapidly fatal septicemia. Peritoneal symptoms usually accompany parametritis but may be relatively insignificant with a fulminating septicemia.

Any discussion of treatment of incomplete abortion will logically fall into two parts: septic and non-septic. The terms febrile and non-febrile are misleading because all febrile abortions are by no means always septic.

Ten years ago one of us presented a paper before the Section on Obstetrics of the Southern Medical Association. At that time the opinion was expressed that every non-septic incomplete abortion should have a surgical emptying of the uterus if a specified waiting period failed to bring about a spontaneous completion. The term "uterine evacuation" was given to the surgical procedure described.[4]

We still believe that non-septic incomplete abortions of 72 hour duration should have a surgical completion. This policy is based upon our previously stated conception of the pathology. Most of us now agree that some oxytoxic is advisable after any termination of pregnancy. Many incomplete abortions will thus complete themselves under such a regimen. Those that remain incomplete, with or without excessive hemorrhage, are the ones we encounter in hospital practice. As shown by our statistics, most of our cases had already passed the 72 hours at the time of hospital admission. Many of these cases would have eventually completed themselves, provided they did not become infected or exsanguinated meanwhile, but we deemed surgical interference advisable because it decreases morbidity, minimizes

*Not included in the series of 1,116 incomplete abortions.

4. Boulware, T. M.: Incomplete Abortion and Miscarriage; Analysis of 521 Cases, South. M. J. 28: 645-649 (July) '35.

hemorrhage, renders infection less likely, and surely shortens convalescence.

Uterine evacuation well describes the simple operation referred to. It is not a dilatation and curettage because cervical dilatation is either unnecessary or only in slight degree. Curettage implies forceful scraping with sharp curette. If a curette is used at all we prefer the dull, large, round type of instrument. The evacuation may usually be accomplished with simple sponge forceps although identification and loosening of large fragments can best be done with the finger. Forceful cervical dilatation in early cases to permit introduction of the finger is contraindicated because of the trauma produced. This emptying should be instrumental. A gauze pack is allowed to remain eight hours in these clean cases. The above procedure is simple, of short duration, and is productive of little or no trauma. Sodium pentothal is an ideal anesthetic for this minor operation.

A slight variation of the above may be employed if the pregnancy is beyond the fourth month and cervical dilatation is inadequate. Under these circumstances, insertion of a small cervical pack and firm vaginal tampon will result either in a more suitable cervix for the following day's evacuation or may result in a spontaneous completion.

It is of course quite evident that some incomplete abortions with alarming hemorrhage will necessitate immediate blood transfusion and surgery without further ado.

Additional measures to maintain natural recuperative powers are blood transfusions for anemia, suitable iron and vitamin preparations if they be indicated, and a nutritious diet.

For the non-septic hospital abortion, incomplete after 72 hours, the above outline seems both rational and logical.

Present conceptions of the treatment of septic incomplete abortion call for conservatism. It is now almost universally agreed that operative intervention in most such cases is contraindicated. Statistics show that chances for recovery will be enhanced by our dependence upon natural powers of limitation and resistance and not upon intrauterine manipulations. While it is true that removal of necrotic material favoring bacterial growth should assist recovery, it is now recognized that the dangers of said removal are frequently greater than the benefits to be derived. Injudicious surgery may disturb any protective leucocytic barrier and open new avenues for blood stream infection. This is especially true if cervical dilatation is necessary. Nonsurgical conservatism does not mean just watchful waiting but also implies stimulation of natural powers of resistance. To that end the following items are important:

1. Suitable oxytoxics to encourage involution and perhaps complete the abortion. Ergotrate (Lilly) is our choice.
2. Repeated blood transfusions: small if patient is not anemic and large if anemia is evident.
3. Sulfonamides in adequate dosage.
4. Penicillin has been used in a few selected cases. Our series of such cases is too small to warrant comment but initial results seem most encouraging.
5. Removal of necrotic tissue with sponge forceps if same protrudes through the cervix.
6. Liberal diet even though the patient is febrile.
7. Strict isolation.
8. Nonperitoneal drainage of such localizations as a cul-de-sac abscess.
9. Cheerful and efficient nursing.

The only indication for intrauterine invasion in such cases should be alarming and uncontrollable hemorrhage. Under such circumstances, the uterine evacuation should be done with a minimum of traumatism and should not be done at all if uterine and vaginal packing will suffice.

From tabulation of cases to follow it is quite apparent that this policy of conservatism was not always followed ten years ago. It is followed today unless hemorrhage becomes alarming and cannot be controlled.

We have thus far outlined a modified active treatment for non-septic incomplete abortions and a conservative plan for the septic one. A differentiation between septic and non-septic thus becomes essential. The following factors merit consideration and evaluation in this differential attempt:

1. Although the history may be most unreliable, it does become quite important if criminal interference is admitted. Under such circumstances, it is advisable to defer active measures until infection has had time

to manifest itself. Three days will usually suffice.

2. Pelvic findings, such as visible evidence of previous instrumentation, very tender uterus with uneffected and poorly dilated cervix, and excessive pain on cervical manipulation, will all arouse our suspicions of criminal interference and potential sepsis.

3. The fever chart is not always reliable. Some few patients will definitely run a temperature elevation from toxic absorption alone. Any appreciable fever of over 24 hour duration will be viewed with much suspicion however.

4. Laboratory guides may be quite informative. Little reliance should be placed in leucocyte counts and differentials because these are even affected by normal term labor and delivery. A most reliable aid is the sedimentation curve. If this evidences the sharp drop of acute inflammation, conservatism will be indicated even though the temperature is normal. The same may be said for the Schilling hemogram.

5. If a careful evaluation of the above factors still leaves doubt as to infection, conservatism will be indicated for several days.

Definite postabortal instructions should be given the patient. Bed rest should be enforced until the rather sluggish uterus has at least partially involuted. Vaginal douching should not be allowed until the cervix is again closed. The knee chest exercise may prevent a uterine retrodisplacement. A careful pelvic check at 4 to 6 weeks will afford opportunity for correction of a cervicitis or retrodisplacement and for advice relative to future pregnancies.

Mention should be made of the professional criminal abortionist. Many maternal deaths each year result from the illegal activities of these individuals. Each city usually contains a number of these illegal practitioners, quacks, nurses and midwives. Their identities are generally known to the medical profession yet their death-dealing trade in mass murder continues. Public and professional apathy is responsible for this.

ANALYSIS OF 1,116 CONSECUTIVE INCOMPLETE ABORTIONS

1. 1060 were considered nonseptic and 56 were treated as septic.

2. 70% had partially aborted more than 72 hours prior to hospital admission. 20% had partially aborted less than 24 hours prior to hospital admission.

3. Only 7% admitted criminal interference.

4. Period of gestation at time of abortion: 1-2 month 13%; 2-3 month 40%; 3-4 month 34%; 4-5 month 8%; 5-6 month 4%; 6-7 month 1%.

5. Admission leucocyte counts: less than 10,000 39%; 10,000 to 19,000 53%; 20,000 to 29,000 6%.

6. Blood transfusions were given to 79 patients.

7. Average hospital stay in nonseptic group was 4.3 days. Average hospital stay in septic group was 13.8 days.

8. Of 56 septic abortions, 46 were of admitted criminal origin.

9. Method of treatment:

	Evacuated	Died	Not Evacuated	Died	Mortality
1060 nonseptic	1009	1	51	0	0.09%
56 septic	23	4	33	6	17.8%
Total uncorrected mortality					0.98%

SUMMARY OF FATAL CASES

1. Mrs. N. admitted criminal, septic, admission blood culture positive hemolytic streptococcus; conservative measures only, died 48 hours.

2. Mrs. R. (44568) admitted criminal, generalized peritonitis on admission, conservative measures only, died 24 hours.

3. Mrs. B. (31924) admitted criminal, afebrile and apparently nonseptic; conservative measures because of the history; hemorrhage became quite alarming 4 days later; several blood transfusions, uterine and vaginal packing did not control hemorrhage; evacuation eventually done, patient died suddenly 3 days later of pulmonary embolus, still afebrille.

4. Miss N. (59126) admitted criminal, septic, conservative measures, died 5 days.

5. L. W. (58329) admitted criminal, septic, conservative treatment, died 21 days.

6. Mrs. H. (75490) admitted criminal, septic, conservative treatment, died 4 days.

7. M. B. (31849) admitted criminal, septic, conservative treatment, died 2 days.

8. Miss L. admitted criminal, very septic; admission blood culture reported positive for staphylococcus aureus; many blood transfusions, sera; uterine and vaginal packing failed to control excessive hemorrhage; evacuation with sponge forceps 6th hospital day, died 19 days.

9. Miss P. (45233) admitted criminal, septic; uterine evacuation eventually necessary because of uncontrollable hemorrhage; cul-de-sac puncture on 15th hospital day, died 21 days.

10. Mrs. S. (41092) admitted criminal, septic, uterine evacuation, died 8 days.

11. J. J. (33923) admitted criminal, septic, evacuation by resident, died 40 days.

COMMENT

Cases 1-2-4-5-6-7 were all conservatively treated septic abortions of admitted criminal origin.

Case 3, the postoperative pulmonary embolus in an afebrile patient, represents the

occasional non-preventable type of loss in any series of this size.

Cases 8-9 had uterine evacuations of necessity and not of choice. Both were septic abortions of criminal origin, were repeatedly transfused, and were first packed in an effort to control the hemorrhage. One had admission blood culture positive for staphylococcus aureus.

Cases 10-11, if treated today, would probably not have been subjected to early surgical interference.

SUMMARY

1. The problem of abortion is intimately related to maternal morbidity and maternal mortality.

2. Among the possible causative factors of early spontaneous abortion, pathologic ovum, embryo, and fetus must occupy a prominent place.

3. Our conceptions of rational management of threatened and missed abortion have been presented.

4. Nonseptic abortions, incomplete after 72 hours, should be completed surgically. The simple procedure of uterine evacuation is described and is suggested.

5. Conservative measures are the treatment of choice for true septic incomplete abortions. If possible, intrauterine manipulations should be avoided. The sulfa drugs have been quite helpful, and penicillin will probably become even more valuable.

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BLOOD CALCIUM AND CALCIUM THERAPY

ERNEST H. PLANCK, M. D.
Anniston, Alabama

It is not the purpose of this paper to enter into any lengthy or technical discussion of blood serum calcium, but rather to aid the busy physician by suggesting certain signs and symptoms related to calcium deficiency which are rather commonly overlooked and which may frequently prove to be the basis for the solution of the patient's problem.

During the past twelve months, I have been quite interested in observing the effect upon various patients of a low blood calcium and the rapidity of response to calcium therapy when given both intravenously and orally. In this length of time I have had the opportunity of observing a series of thirty cases, all of which showed a definitely low serum calcium and all of which responded satisfactorily to treatment.

I have used the Clark-Collip modification of Tisdall's method routinely and have had no difficulty in making the determinations in my own office laboratory. The only point that I have to offer in regard to the technic of the determination, which is fully covered in many laboratory tests, is to suggest that the serum be allowed to stand for at least twelve hours before the test is made. My experience has been that tests run on serum standing for only four hours will frequently give a higher calcium content than those specimens which have stood for at least twelve hours, thereby failing to disclose an actual deficiency. Of course, it is advisable to use only fasting blood specimens in making the blood calcium determination, and normal is considered to be 9-11 mgm. %.

Of the thirty cases in my series, ten, or 33 1/3 per cent, were men and twenty, or 66 2/3 per cent, were women. Among the men the ages ranged from 17 to 73, while among the women the lowest age observed was 24 and the highest 58. These patients came from all walks of life and from all the different strata of society, but there were only Caucasians in the group and no Negroes. The percentage of cases falling in the different age groups may be illustrated best by the following table:

Distribution of Cases of Serum Calcium Deficiency

10 Men (33 1/3% of Total)

Age		15-19	20-29	30-39
		25%	10%	0%
Age	40-49	50-59	60-69	70-79
	10%	10%	10%	35%

20 Women (66 2/3% of Total)

Age	20-29	30-39	40-49	50-59
	18%	48%	18%	16%

A glance at the accompanying table (men) shows that the deficiences are more prevalent in youth and old age, with an average distribution of the deficiencies through the intervening age groups. A simple explanation of this finding would be the factors of malnutrition and debilitating conditions which certainly play a prominent part in both these age groups. No particular explanation occurs to me for deficiences found in the middle brackets except faulty metabolism of calcium.

Study of the second portion of the table (women) reveals a relatively even distribution through the age groups with the exception of the 30-39 bracket which is more than double that of any of the other groups. In general, most of the calcium deficiencies among the women were found in individuals who were attempting to lose weight or at least not to gain, and the 30-39 year group was particularly zealous in the attempt. Dieting, of course, eliminated the majority of calcium rich foods from the daily menu, such as milk, eggs, and cheese and quite a number of vegetables. One woman was an asthmatic and was allergic to milk, eggs and cheese and one other was in the seventh month of pregnancy and had not had supplementary calcium by mouth.

The lowest calcium observed was 6 mgm. % and this was found in the pregnant woman above mentioned. She was actually in a state of tetany at the time, having severe and painful flexion of fingers, toes and legs. In this case all of the usual signs and symptoms of calcium deficiency could be found.

Both men and women offered the same symptoms and complaints in general and it is quite interesting to note that these symptoms were rather vague and certainly did not point the finger directly at a calcium deficiency. In fact, most of the histories obtained were suggestive of arthritis or neuritis although these conditions could not be found on physical examination nor could any physical reason for their presence be demonstrated. In every instance, however, close questioning revealed that the diet was low in calcium-containing foods.

Some of the principal complaints were as follows:

1. Pain either just above or below joints in the bones.
2. Pain in the muscles of the calves of the legs on one or both sides, usually more pronounced during exercise and after retiring.
3. Pain in the forearm muscles, usually limited to one side.
4. Pain in the biceps muscles.
5. Painful contraction of muscles of the feet and toes, usually after retiring.
6. Spastic contraction of finger and hand muscles during or just after more than average use.
7. Pain in the muscles on each side of spinal column.
8. Insomnia.
9. Dizziness.
10. Nervous irritability.
11. Emotional instability.
12. Nausea, observed in women only.
13. Repeated attacks of syncope without warning.
14. Carious and brittle teeth.
15. Ridges in nails of fingers and toes.
16. Dermatitis of scalp and face.
17. Fine tremor of fingers.
18. Shortness of breath.

In this series of cases a careful history was obtained and a thorough physical examination done on each individual. All other possible conditions which might have contributed to the symptoms and complaints were investigated and ruled out, where necessary, by other laboratory procedures. In all cases, blood calcium, urinalysis and a complete blood picture were done and, in quite a number, complete blood chemistry was done to rule out other pathology. No cases were selected for this series in which any other complicating physical disability was found which might produce a similar set of symptoms. The entire series showed a blood calcium ranging from 8.5 mgm.% to 6.0 mgm.%; and in only one case, the obstetric patient in tetany, were the signs and symptoms of calcium deficiency so marked

as to be obvious from the standpoint of physical examination.

The method of treatment employed consisted of the intravenous administration of 10 cc. of 10% calcium gluconate solution on alternate days until six doses had been given. At the same time, oral therapy in the form of 10 grains of dicalcium phosphate with viosterol three times daily was begun and continued for at least one month. The patient was placed on a high calcium diet, and in every case but one, the obstetric case, oral administration was discontinued at the end of one month with no recurrence of symptoms, the diet being sufficient to maintain an adequate serum calcium.

Following this routine of treatment, improvement was noted in almost every case within forty-eight hours, and usually complete relief of symptoms was observed by the time the course of intravenous calcium had been completed. All of this series of cases had obtained relief from symptoms by the end of one month's therapy consisting of high calcium diet and calcium orally three times daily. Each of these cases was followed for a period of six months after treatment had been discontinued and none reported a recurrence of trouble associated with calcium deficiency.

In conclusion, I would like to emphasize the fact that calcium deficiencies, unless marked, are not easily recognized clinically unless they are carefully searched for. The busy physician may be inclined to overlook the borderline deficiency cases and attribute their complaints to malingering or hypochondriasis, or to confuse them with symptoms of arthritis or rheumatism, or any number of other conditions. Careful consideration of the calcium factor will in many cases give you a cured and satisfied patient instead of a chronic complainer on your lists. My personal belief is that we have failed to emphasize the importance of this condition in our texts and in the training of our students. Very little, if anything, has been said in regard to calcium deficiencies of the subclinical or relatively minor type as have been discussed in this paper. I also question the accuracy of our present standard of accepted normal, 9-11 mgm.%, and believe that it should be revised upward, since I have seen quite a number of cases, not included in this series however, with serum calcium of 9 or even 9.5 mgm.% presenting signs and symptoms of calcium deficiency which were relieved by calcium therapy as outlined in this paper.

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Pentothal Sodium Anesthesia—Administration of the anesthetic is not started until the operative field has been prepared, the patient draped and the surgical team ready. The rapid and smooth induction of anesthesia with pentothal sodium allows this delay which is justified by the shortened total period of anesthesia.

At this point it is important to stress the frequently reported, but often forgotten, fact that individuals vary in their susceptibility to barbiturates, particularly when given intravenously, and that the dosage of pentothal sodium must be adjusted in accordance with the effects produced in each patient. Induction and maintenance of anesthesia are accomplished by administering intermittently small fractional doses of the drug.

The dose of pentothal sodium cannot be computed on a milligram per kilogram of body weight basis. Experience and training are the essential factors in determining the size dose and rate of administration of this drug. Slowness in the administration of pentothal sodium cannot be overemphasized. Pentothal sodium is administered just sufficiently rapidly to obtain anesthesia, but, more important, sufficiently slowly so that respiration is not depressed. It must be continually borne in mind that, due to the rapid onset of action and rapid rate of absorption of pentothal sodium, all signs are subject to rapid change.

It is helpful to have the patient count slowly or talk during the induction period. When the patient has been instructed, 2 cc. of the 2.5 per cent pentothal sodium solution are injected intravenously in 10 to 15 seconds. The injection is then stopped for about 30 seconds to observe the reaction of the patient to the drug and dose given. In accordance with the patient's reactions, 4 to 6 cc. are then injected slowly. Anesthesia usually occurs within 30 seconds after administration of this dose. When speech becomes blurred and the patient begins to lose consciousness, the injection is stopped and no more solution is injected until signs of lightening anesthesia indicate the need of a supplemental dose.

While the doses mentioned above will induce anesthesia in the average adult, unusual responses are not infrequently observed. Younger individuals usually require larger doses, especially those between 18 and 30 years of age, and the short, square, heavily muscled individual requires larger doses.—*Kennedy, J. M. A. Georgia, Nov. '44.*

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CAPTAIN SUMNER DAVIS RECEIVES CITATION

(J. A. M. A. 126:774 (Nov. 18) 1944)

Capt. Sumner D. Davis, Talladega, Ala., has been awarded the Bronze Star for "heroic achievement in connection with military operations against the enemy near Santa Rosa, Island of Guam, M. I., on Aug. 12, 1944." His citation continues: "While accompanying a patrol which encountered heavy enemy fire in a thick jungle area, Captain Davis administered medical aid to members of a patrol who were wounded. He carried them to the ambulance and risked his life to make possible their rapid evacuation under fire. He then aided in evacuating the dead. His conduct was an inspiration to the men of his battalion." Dr. Davis graduated from the University of Alabama (1930) and the University of Pennsylvania School of Medicine, Philadelphia (1933), and entered the service Sept. 16, 1942.

1944 INITIATES, AMERICAN COLLEGE OF SURGEONS

List of initiates from Alabama who were accepted into fellowship in the American College of Surgeons in 1944 is as follows:

Neal L. Andrews ..... Birmingham
Hunter M. Brown ..... Birmingham
Norborne R. Clarke, Jr. ..... Mobile
Luther Davis, Jr. ..... Tuscaloosa
Charles J. Donald, Jr. ..... Birmingham
B. Franklin Jackson, Jr. ..... Montgomery
Geoffrey J. Roscoe ..... Birmingham
Francis M. Thigpen ..... Montgomery

INFECTIOUS MONONUCLEOSIS

"Infectious mononucleosis, also called glandular fever, presents a problem in diagnosis to physicians, especially those attending large groups of young people. Although it is well known that any young febrile adult suffering with symptoms of a more or less simple sort (cold, sore throat, grip, etc.) should be suspected of having infectious mononucleosis and the necessary laboratory tests made to determine the fact definitely, the procedures are often overlooked. At the Stillman Infirmary, connected with Harvard University, my colleagues and I have observed and attended a large number of young men suffering from this disease." Thus does Contratto[1] open his discussion of this disease. The author, between 1935 and 1943, found 196 patients, or 1.5 per cent of the total number of medical admissions, suffering from infectious mononucleosis and he tells us that "the variability of the symptoms and physical manifestations with accompanying complications combine to make this illness a diagnostic problem; and, although recent knowledge and interest in the subject have greatly assisted in eliminating some of the difficulties, it is not understood well enough to rule out at all times rather serious diagnostic procedures. However, too frequently patients have had to endure excision of lymph nodes, sternal puncture or blood transfusion before infectious mononucleosis was suspected and simple laboratory procedures made the diagnosis certain. Extended fatigue and general malaise, which is a common feature of this disease, may excite the patient or his family with the thought of a lingering illness."

Sore throat was the most common symptom complained of. Headache, ranging from very mild to severe, often heralded the on-

1. Contratto, Andrew W.: Infectious Mononucleosis: A Study of One Hundred and Ninety-Six Cases, Arch. Int. Med. 73: 449 (June) 1944.

set of the disease. Fatigue, general malaise and anorexia were frequently encountered. Fever and lymphadenopathy were present in the majority of cases, but not in all.

"The diagnosis of infectious mononucleosis cannot be made unless either the heterophile reaction is positive in high dilution or the blood smear is typical."

"In this series, the diagnosis was not made without what I consider a typical blood smear for this disease, which means that the percentage of neutrophilic cells was below 40 and in the smear there were a large number of so-called atypical lymphocytes." The total white blood cell count usually ranges from 10,000 to 20,000 and, sometimes, up to 25,000 or even higher. Contratto says that "it is evident from these figures that the leukocyte count in itself is of little assistance in making an accurate diagnosis."

The Cambridge investigator goes on to tell us that "it is my feeling, however, that this disease is attended with the risk of no more complications than an ordinary infection of the respiratory tract and any complication is usually that of a concomitant infection or the exacerbation of an old process. No complication was noted in any patient in this series that could be directly attributed to infectious mononucleosis as the etiologic agent." And he warns us that many patients are inclined to leave the hospital too soon and to attempt to do hard work before they are fully recovered and that, consequently, they must be hospitalized a second time. And he informs us that "there is no specific therapy for infectious mononucleosis."

Contratto has done well to call our attention to this disease, which is probably of much more frequent occurrence than is generally realized. He has had an unusual opportunity to study infectious mononucleosis and to add to our knowledge of it, and he has certainly made a splendid contribution to this subject, and practitioners, especially those who deal with many young people, will do well to bear in mind his conclusions, which are:

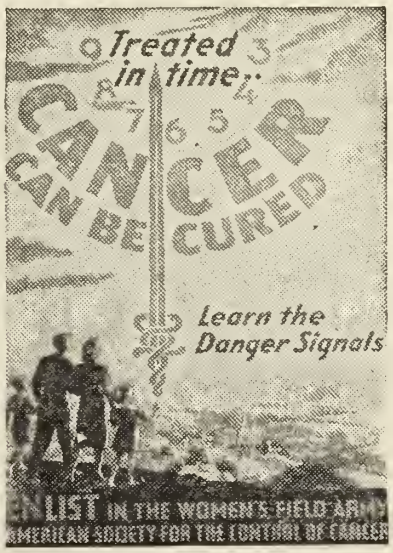
"Infectious mononucleosis is a benign illness.

"The complications encountered in this series were varied, but they are believed not to be directly referable to the disease.

"Infectious mononucleosis may be accompanied notably by lymphadenopathy, splenomegaly, jaundice, Vincent's angina, ulcerations of the throat, fever, a conspicuous change in the blood picture and a number of complaints identical with those common to an ordinary infection of the upper respiratory tract.

"Accurate diagnosis is difficult because of the variability of the symptoms and clinical manifestations. The problem and major difficulty in this disease is the making of a differential diagnosis, which can easily be accomplished by the heterophile test, blood count and smear. I have pointed out the importance of making not only more than one but frequent tests and smears during the course of the illness, since a peculiarity of infectious mononucleosis is that there is more often than not a delay of days or even weeks before the hematologic changes are conclusive enough to permit an accurate diagnosis."

Medical Certification—Because of the great need of workers in war jobs and because many of these workers feel that they want to get back to their civil occupation, and because this is difficult with the present War Manpower Commission regulations, of extreme importance to our war efforts is the fact that medical certificates are being used widely in order to obtain release from war work . . . We must do our part as physicians to keep the war workers at work. The issuing of a certificate of illness or of ill health is a definite responsibility. It should not be done lightly.—*Editorial, New Orleans M. & S. J., Dec. '44.*



STATE DEPARTMENT OF HEALTH

BUREAU OF ADMINISTRATION

B. F. Austin, M. D.
State Health Officer

SURGICAL TREATMENT OF TUBERCULOSIS

About 70 years ago a young Italian physician on the staff of one of Milan's leading hospitals became very much interested in tuberculosis and began making a special study of the medical literature dealing with this disease. The articles and books over which he conscientiously pored were of course quite different from those available to medical workers of our time. Robert Koch's discovery of the tubercle bacillus, the germ responsible for tuberculosis, was still about eight years in the future. The x-ray was not to be placed at the service of medical science for another two decades or longer. The doctor's and the layman's conception of the disease and its treatment was utterly different from their 1944 conception. But, primitive as tuberculosis therapy then was, as viewed by present-day standards, this young physician's interest in the disease increased with his knowledge of it.

One reason for that vaulting interest was what appeared to be a remarkable coincidence. As he studied one case history after another, he was struck by the discovery that a large number of tuberculosis patients whose lungs became collapsed through accident or for any other reason improved rapidly and many even recovered completely—a surprising thing in view of the fact that, at that time, recovery was something in the nature of a miracle and improvement a considerable rarity. Pondering these cases, Dr. Carlo Forlanini, decided that this was not a series of startling coincidences at all but cause and effect. This form of collapse, known as spontaneous pneumothrax, appeared to him to do for the victim of pulmonary tuberculosis more than all the medical men of his time had been able to do.

Remember that up to this time and for a considerable time afterward tuberculosis was not regarded as a germ disease, and it was difficult to find a place in the medical thinking of his era for his new conception of the role of artificial pneumothorax in its treatment. Gradually he decided that the lungs were capable of becoming infected and that the progress of the disease was due to the increase in the lung area involved. This spread of the infected area, he decided, was the result of the lungs' being in constant motion, working twenty-four hours a day to keep the body supplied with life-giving oxygen. What could be more reasonable, then, than that the putting of a lung to rest by means of spontaneous collapse, would check and even stop the spread of infection? Therein lay the genesis of one of the most helpful measures ever developed for the control of human illness and the saving of human life.

In a paper published soon after he began this aspect of his study of tuberculosis Forlanini wrote:

> "I see the proposition of artificial pneumothorax in phthisis (tuberculosis) supported, moreover, as a necessary, logical, obvious offspring of clinical facts, the worth of which cannot be doubted for one part, and of the most elementary ideas of physiology and physics for the other part. It has, to my mind, requisites worthy of consideration.
>
> "It would certainly seem rash to me today to attempt it directly on a consumptive. But when by experimentation on animals it will have been demonstrated that the physician can measure with precision artificial pneumothorax and always control its volume, and when the absolute harmlessness of proper gases brought into contact with the pleura will also have been demonstrated, then this operative procedure should seem logical and legitimate."

Forlanini was not satisfied to state a theory. He tested it in experiment after experiment and gradually built up a strong and indeed irresistible case for it. In 1888 he put it to the supreme test of practical application, injecting air into the chest of a patient who was suffering from pleurisy. About four years later he injected air into the chest of another patient known to have tuberculosis. Addressing medical congresses in Rome in 1894 and 1895, he described these procedures and their results, but his conclusion—that artificial pneumothorax offered an effective means of treating tuberculosis of the lungs—was not accepted by his

fellows of the medical profession. They were to remain skeptical for a considerable time.

Meanwhile others were experimenting with artificial pneumothorax, including some who, as far as is known, were working entirely "on their own" and receiving no benefit from Forlanini's labors. Among them was an American, Dr. John B. Murphy, one-time president of the American Medical Association and known as "the stormy petrel of American medicine." Three years after the Italian presented the last of his papers on artificial pneumothorax before important medical congresses in Rome, the American created what one writer called a "great sensation" at the annual meeting of the American Medical Association by presenting a paper on "Surgery of the Lung." In that paper he reported eight cases of pulmonary tuberculosis in which artificial pneumothorax had been used. In five of them, he said, the procedure was successful.

After making this brilliant beginning, Dr. Murphy appears to have lost interest in the subject, and one of his pupils, Dr. A. F. Lempke, took up the work. The latter treated no fewer than 350 cases of tuberculosis with artificial pneumothorax during a single three-year period.

Although he presented two papers on the subject prior to his death in 1906, Dr. Lemke's fellow-physicians did not show much interest. Some even condemned this procedure as dangerous and useless. The situation was somewhat different in other countries, however, and pneumothorax clinics were established in France, Denmark, Switzerland and Germany. Meanwhile Forlanini's own clinic continued in operation in Milan. Later the procedure began winning favor in this country and is now a routine form of treatment in every modern sanatorium.

And what is this remarkable procedure which that Italian physician gave the world of the tuberculous?

The advantage of generalized rest—that is, rest for the body as a whole—in tuberculosis therapy has long been recognized. The famous Dr. Edward L. Trudeau demonstrated it many times in his famous pioneer sanatorium in the Adirondacks. Patients whose disease had been progressing rapidly began to improve equally rapidly when kept in bed. This is explained on two grounds: (1) When the body is at complete rest in bed, the average person takes only about one-fifth as many breaths per minute as he does while taking violent exercise and less than half as many as he takes while walking. Moreover, the breathing is not so deep. Thus there is a considerable reduction in the amount of work which the diseased lung must do and a corresponding reduction in the strain which is placed upon it. (2) Rest in bed enables the body to build up its general resistance to the disease germs, just as it does in the case of a bad cold or influenza.

But even when one lies quietly in bed, the lungs do not normally obtain complete rest. They must continue to work, albeit at a slower, less difficult pace. Even this amount of strain upon them is often sufficient to prevent them from winning their life-and-death battle with the invading tubercle bacilli.

To give them—or rather one of them, the diseased one—this added measure of rest is the purpose of artificial pneumothorax. When it is successfully administered, a diseased lung ceases to function as completely as if it had been surgically removed, and the entire work of supplying life-giving oxygen to the body is carried by the other one. Since nature was generous when she allocated the body's lung area, this carrying of the entire burden of breathing does not impose an undue strain upon the other lung.

The limitations of space preclude a detailed explanation of the procedure by which artificial pneumothorax is administered. Suffice it to say that collapse of a diseased lung is accomplished by forcing air between the two layers of pleura. This is the smooth covering which lines the inner wall of the chest and also covers the lungs. Air pressure between those two layers tends to make the lung, a sponge-like organ, become smaller and smaller until it finally attains a size only a fraction of its normal, expanded self. When it is thus reduced, it is said to be collapsed, and, as already indicated, is then, to all practical purposes, out of action while the other lung does the work of both. In that way the diseased, or collapsed, lung obtains complete rest.

The administration of artificial pneumothorax is one of the simplest of operations and requires only a few minutes. Having

selected a suitable spot between the ribs, the tuberculosis expert cleans it, injects novocaine or some other local anesthetic to prevent the slight pain and then pushes a hollow needle through the chest wall until it penetrates the lining of the wall but not that of the lung itself. Then the hollow needle, which of course has been sterilized, is attached to a rubber tube which, in turn, is attached to an arrangement of bottles, one empty and the other containing water. As the position of the bottles is changed, water from one bottle is forced into the other one, and the air which it displaces is forced through the tube and hollow needle into the pleural cavity. This procedure must be repeated periodically, as the air thus inserted is absorbed and has to be replaced. Otherwise the collapsed lung would soon expand and resume its normal function, thus ceasing to get the rest it needs. When the attending physician has reason to believe the collapsed lung has healed sufficiently, he brings the artificial pneumothorax procedure to an end by the simple expedient of discontinuing those refills. As it gradually expands, he watches it through the fluoroscope or by means of x-ray pictures. If he finds that it has not healed as much as he thought, the refills are resumed and the lung is again collapsed. If, on the other hand, he decides that sufficient healing has taken place, complete expansion is permitted.

Some cases of tuberculosis are not suited to artificial pneumothorax. When both lungs are extensively involved it may be unsafe to place upon either of them the full burden of breathing. In a certain number of cases the pleurae—the lining of the chest wall and of the lungs—become adhered to each other and a collapse cannot be obtained. Sometimes these adhesions, as they are called, can be cut by a surgical operation and a collapse obtained.

Those whose cases are suited to this procedure are indeed fortunate, and fortunately they constitute the vast majority of those being treated at present. Thanks to it, a bright new world of hope has been opened to hundreds of thousands, nay millions, of persons who otherwise would be condemned to a long period of helpless invalidism for which there would be little hope of escape except by death. That even the far advanced case need no longer be regarded as hopeless is a tribute to Carlo Forlanini and his fellow-pioneers in the broad, fruitful field of collapse therapy.

BUREAU OF PREVENTABLE DISEASES

D. G. Gill, M. D., Director

PREVALENCE OF COMMUNICABLE DISEASES IN ALABAMA

1944

	Sept.	Oct.	E. E.* Oct.
Typhoid	125	7	24
Typhus	161	92	46
Malaria	642	322	858
Smallpox	0	1	0
Measles	9	9	16
Scarlet fever	99	115	122
Whooping cough	66	51	67
Diphtheria	121	163	156
Influenza	35	89	129
Mumps	46	21	32
Poliomyelitis	17	7	9
Encephalitis	2	0	1
Chickenpox	4	9	18
Tetanus	6	2	6
Tuberculosis	201	223	238
Pellagra	4	0	16
Meningitis	12	12	6
Pneumonia	105	130	115
Trachoma	1	0	0
Tularemia	0	0	0
Undulant fever	9	7	6
Dengue	0	0	0
Amebic dysentery	10	1	0
Cancer	229	190	0
Rabies—Human cases	0	0	0
Positive animal heads	27	19	

As reported by physicians and including deaths not reported as cases.

*E. E.—The estimated expectancy represents the median incidence of the past nine years.

BUREAU OF MATERNAL AND CHILD HEALTH

J. S. Hough, M. D., Acting Director

REPORT OF THE NUTRITIONIST IN THE CRIPPLED CHILDREN'S CLINICS

Contributed by
Myrtle M. Letford, Nutritionist

During the year 1944 the nutritionists of the State Department of Health have been attending the Crippled Children's Clinics and helping with feeding problems of the children and giving the parents suggestions for diets where cases are referred by the orthopedic surgeons.

Realizing more each day that the rate of growth and degree of health in every person has a direct relation to the quality and quantity of food intake, it was felt that this service would be a real contribution to the Crippled Children's Service.

This being a new experience, in order to receive the best benefits from this activity, a procedure was worked out so that the nu-

tritionist could interview the patients without being disturbed by a confusion of people going in and out. The following plan is now in use:

At each clinic the nutritionist is provided with a small room or separate space to interview her patients. A table for writing and for food models is available. A Nutrition Review (see accompanying form) is made on each person referred by the physician. On the desk of the orthopedic surgeon at the beginning of each clinic is placed a number of Nutrition Review forms. In referring a patient to the nutritionist, the physician writes on the review form the name of the patient, the diagnosis, and his recommendations as to diet, such as (1) High protein diet, (2) Decrease fats or carbohydrates, or (3) Increase vitamin A, D, and calcium. The patient is then directed to the nutritionist by the orthopedic nurse. The Nutrition Review is completed by the nutritionist who outlines a diet including the recommendations of the physician. On the review form a place is provided for the signature of the physician and the nutritionist.

NUTRITION REVIEW

STATE DEPARTMENT OF HEALTH

Date: 1944

Name of Patient:
Address:
Parent's Name:
Description of Trouble:
Observation of Nutritional Status:

Orthopedic Surgeon

Story of Food Habits:
Apparent or Related Availability of Nutritive Requirements:
General Comments:
Recommendations:

Nutritionist

Every effort is made to understand the food problems of the patient at home. This is necessary before sound and practical advice can be given. At the end of each session the records are given to the orthopedic nurse. Later, a record of the Nutrition Review is transferred to the permanent Crippled Children's Clinic file for future use. The original review is then returned to the respective county health departments to become a part of the patient's record there. In order to become more familiar with the patient and to judge the improvement, if any, a file has been made on each patient. At the present, clinics are being attended for the second time since this service started. In many, some improvement has been noticed by the nutritionist; others remain the same.

During 1944 attendance ranged from fifty to one hundred and forty patients per clinic session. At each clinic fifteen or twenty patients were interviewed by the nutritionist. Many of the patients are undernourished or are overweight, and their greatest need is proper food. In every interview a good, simple, and well-balanced diet is discussed with the parent, and the type of food recommended by the physician is emphasized.

BUREAU OF SANITATION

T. H. Milford, M. S. in S. E., Director

CLEANING COMPOUNDS FOR FOOD ESTABLISHMENTS

Contributed by

Franklin A. Clark, B. S., D. V. M.

What are the requirements which should be met for a satisfactory cleaning compound or wash powder for use in food establishments? There are five. These are water softening, wetting, saponifying, emulsifying, and rinsing abilities.

The water softening ability is placed first because most waters contain some hardness. The dissolved chemicals (mostly calcium and magnesium) which cause this hardness, unless neutralized, usually react with some of the chemicals of the cleaning compound making it less effective or necessitating excessive quantities. Precipitated hardness is also the common cause for cloudiness or spots on cleaned utensils.

There are a number of chemicals which soften water. These include soda ash, lye, trisodium phosphate, sodium metasilicate, and polyphosphates. Many cleaning powders, especially those for dairy use, contain soda ash. It is not irritating to the hands and has considerable saponifying ability. Lye is a fair water softener and saponifying agent, but is quite irritating to hands and is hard to rinse off. Trisodium phosphate is an excellent softener and is not irritating to hands. It forms a sludge or flocculent precipitate in hard waters which is hard to rinse off. In addition, it renders utensils, particularly glasses, so slick they are hard

to handle. Sodium metasilicate acts very much like trisodium phosphate. The polyphosphates have the distinct advantage not only of effectively softening nearly any kind of water but of keeping the chemicals causing hardness in non-active solution. Use of polyphosphates has been somewhat curtailed because of industrial demands directly connected with defense manufacture. However, many of the newer washing powders, including some of the powdered soaps, contain them. Soaps are poor water softeners except when used in excessive quantities.

Ability to wet even a dirty surface, that is reduce surface tension, is necessary to permit the solution of washing compound to penetrate and get under the soil on the dish or utensil. Use of wetting agents materially reduces the amount of brushing or scrubbing necessary, especially for greasy or crusted utensils. Wetting of the soil permits saponification of fats and softening of solids such as dried eggs and milk. Many wetting agents have become available. Most of these consist of sulfonated alcohols or acid salts of poly-alkylene polyamines. It may seem strange, but water is the poorest of liquids for wetting. When soap is added it becomes an even poorer wetting agent. That is, the surface tension is increased. This is evident when soap bubbles are formed.

Saponifying ability is possessed to some degree by all alkalis. This is the ability to combine with grease to form soaps. In fact. commercial soaps are made by combining (saponifying) fats or oils with an alkali, usually sodium or potassium hydroxide. When soap is formed by chemical reaction between the alkali in a cleaner and the grease on utensils it remains in solution or emulsion in the wash water and can be easily rinsed off the utensil. Like all chemical reactions, saponification is speeded up by increasing the temperature. In addition, temperatures above 110° F. in the wash water liquefy or melt most fats on utensils. Since soap itself is a saponified fat, it is not a saponifying agent. Certain chemicals, particularly those causing hardness in water, may combine with fats and soap to form what is known as insoluble soaps. A common example of this is the material adhering to a bath tub where hard water is used. This is hard to rinse off utensils when formed and adheres to the wash vat as a sticky deposit. Lye, trisodium phosphate and sodium metasilicate all are reported as good saponifying agents.

Emulsifying ability is of importance in cleaning food serving utensils. Emulsification merely means the breaking up of fats or oils into small droplets or of solid matter into small particles followed by the formation of a film around each droplet or particle so that it will remain in suspension in a fluid such as wash water. The film formed around such particles or droplets also prevents their sticking to surfaces with which they later come in contact, thus making them easy to rinse off utensils. The white cloudiness present in water when greasy utensils or hands are washed in it with soap indicates an emulsion.

Soap is probably the most common emulsifying agent used in dish washing compounds. Although fats and grease can be removed from utensils by saponification with alkalis, soap speeds their removal by emulsifying part of them. It also is needed to form a film around solid food particles removed from the utensils. Some means of breaking up grease into droplets, and larger food particles into smaller ones, so that they will be held in suspension (emulsion) in the wash water is necessary. This is usually accomplished by brushing or scrubbing. After grease is removed from a utensil to the wash water either by melting it, or through the use of a wetting agent which penetrates under the film and wets the utensil surface thus preventing adherence of the grease, vigorous stirring or agitation will emulsify it. However, when dishes are washed by hand, agitation of the wash water is not sufficient as the sole reliance for emulsification and scrubbing is also necessary.

Free and easy rinsing of utensils after washing is completed is important both to save time and water as well as to prevent cloudiness or spots which may be most readily observed on glasses. Water softening and wetting agents both improve rinsability of cleaning compounds.

From the above brief discussion of essential properties of a washing compound, it is evident that no single chemical compound possesses all of them. Therefore, good cleaners are mixtures of several. Perhaps it should be stated here that the perfect cleaner, that is one that is equally efficient re-

gardless of the type of utensil and its soil as well as the type of water used, has not been devised. Obviously, a cleaner having a high percentage of water softening chemicals would not be needed where soft water is used. A cleaner which would satisfactorily clean water glasses with the outstanding quality of rinsability to leave them bright and sparkling might be inefficient on a greasy skillet where wetting, saponifying and emulsifying abilities are particularly needed.

Food serving establishments usually need at least four different cleaning compounds. One for dishes which readily wets the dish and its soil as well as saponifies fats and holds food particles and fat droplets in emulsion in the wash water. A second for glasses and possibly silverware which has outstanding softening and rinsing ability so as not to leave the glasses cloudy or spotted, or tarnish the silverware. A third for cooking utensils where grease and crusted or charred food debris is the principal soil should have outstanding wetting and saponifying ability. A fourth for kitchen floors where grease and food particles are ground into them. Each of these should be suitable for the use to be made of it and to the water it is to be used in.

It is not possible for an inspector to determine in advance whether a cleaner will be satisfactory under any particular conditions. However, when he observes one or more specific cleaners as being quite effective with a given water supply, he can recommend them to other operators who use the same water. From such observation, it should not take long to find effective cleaners for each use in any city. Operators should be cautioned about buying a large supply of any new cleaning compound. It is preferable to secure only sufficient at first to give it a thorough trial. If it does not prove satisfactory, a different kind should be secured until one that is satisfactory is found. When a satisfactory cleaner is found for a particular use and water, it is usually wise not to experiment further. The dish washing personnel should be trained to use washing compounds provided in proper amounts. This will not only save the operator money, but will also save labor in washing dishes, and prevent dirty dishes or unsightly glasses from being served to customers.

BUREAU OF VITAL STATISTICS

Ethel R. Hawley, Acting Director

PROVISIONAL MORTALITY STATISTICS

REPORTED BIRTHS, STILLBIRTHS, DEATHS FROM CERTAIN IMPORTANT CAUSES AND RATES*—ALABAMA SEPTEMBER 1944, 1943, 1942

Births, Stillbirths, and Causes of Death	Number of Deaths Registered—Sept. 1944			Rate Annual Basis)		
	White	Colored	Total	1944	1943	1942
Births (exclusive of stillbirths)	**	**	6540	27.6	28.1	27.1
Stillbirths	**	**	187	27.8	35.7	31.7
Deaths (exclusive of stillbirths)	1039	892	1931	8.1	8.2	8.8
Infant deaths:						
Under one year	143	120	263	40.2	39.1	44.6
Under one month	90	66	156	23.8	25.3	31.1
Typhoid and paratyphoid 1, 2					0.8	0.8
Epidemic cerebrospinal meningitis 6	3	2	5	2.1	0.8	0.4
Scarlet fever 8		1	1	0.4		
Whooping cough 9	5	7	12	5.0	5.0	2.5
Diphtheria 10	10	1	11	4.6	1.3	2.1
Tuberculosis, all forms 13-22	41	54	95	40.0	41.6	45.8
Malaria 28	1	7	8	3.4	2.9	6.3
Syphilis 30	8	26	34	14.3	14.3	15.5
Influenza 33	2	3	5	2.1	3.4	3.4
Measles 35						0.4
Poliomyelitis 36		2	2	0.8	0.4	
Encephalitis 37						1.3
Typhus fever 39	5	3	8	3.4		0.8
Cancer, all forms 45-55	120	54	174	73.4	56.8	66.4
Diabetes mellitus 61	15	6	21	8.8	13.4	14.3
Pellagra 69	4	8	12	5.0	4.6	6.3
Alcoholism 77	1		1	0.4	0.8	1.3
Intracranial lesions 83	101	77	178	75.0	74.0	81.9
Diseases of the heart 90-95	223	164	387	163.1	163.1	153.4
Diseases of the arteries 96-99	11	9	20	8.4	5.9	11.8
Bronchitis 106	2		2	0.8	1.7	0.8
Pneumonia, all forms 107-109	36	40	76	32.0	27.3	25.2
Diarrhea and enteritis (under two) 119	22	15	37	15.6	11.8	9.2
Diarrhea and enteritis (two and over) 120	4		4	1.7	3.4	4.6
Appendicitis 121	8	4	12	5.0	6.7	9.7
Hernia, intestinal obstruction 122	9	5	14	5.9	4.6	8.0
Cirrhosis of the liver 124	7	6	13	5.5	2.9	4.6
Nephritis, all forms 130-132	69	86	155	65.3	61.8	67.6
Diseases of the puerperal state 140-150	12	12	24	35.7	37.5	46.6
Puerperal septicemia 140, 142a, 147	1	3	4	6.0	14.4	15.0
Suicide 163-164	12	2	14	5.9	5.5	6.3
Homicide 165-168	11	11	22	9.3	9.7	17.6
Accidental deaths (exclusive of motor vehicle) 169, 171-195	54	36	90	37.9	49.2	48.7
Motor vehicle 170	20	14	34	14.3	18.9	25.6
All other known causes	187	127	314	132.4	135.8	145.4
Ill-defined and unknown causes 199-200	36	110	146	61.5	78.2	75.6

**Not available.

*Births and death rates per 1,000 population; infant death rate per 1,000 live births; stillbirths per 1,000 total births (inclusive of stillbirths); from specific causes per 100,000 population; from puerperal causes, per 10,000 total births.

BOOK ABSTRACTS AND REVIEWS

Surgical Errors and Safeguards. By Max Thorek, M. D., LL. D., D. C. M., F. I. C. S., Professor of Surgery, Cook County Graduate School of Medicine, and Attending Surgeon, Cook County Hospital. With a foreword by Sir Hugh Devine, M. S. (Hon.), F. R. C. S. (Eng.), F. R. A. C. S., F. A. C. S. (Hon.); and a chapter on Legal Responsibility in Surgical Practice by Hubert Winston Smith, A B., M. B. A., LL. B., M. D. Fourth edition, completely revised. Cloth. Price, $15.00. Pp. 1,084, with 794 illustrations, many in colors. Philadelphia: J. B. Lippincott Company, 1943.

Surgical Errors and Safeguards is a book written on the premise that it is human to err but inhuman not to try if possible to protect those who entrust their lives to us. The volume has shown its demand and usefulness by undergoing four editions. The author is one of this country's foremost surgeons whose name is overburdened by the many titles conferred upon it. He has honorary degrees not only from leading U. S. medical centers but also from numerous European, South and Central American medical schools.

The book is divided into nineteen chapters which cover the vast field of surgery adequately. The book is a masterpiece if for only one reason and that being the unlimited number of cases in which a lesson is taught where something went wrong that could have possibly been avoided.

This book is not only made up of cases where the author made an error but of a collection of cases where the surgeon was man enough to confess his errors so that others may profit from his mistakes. Errors are not made only in the so-called "Major" surgery, but often are the result of minimized "Minor" surgery. Any surgical procedure may in itself be the cause of an avoidable death and should be thus respected. This book starts off with an excellent discussion on the choice of anesthetics, preoperative preparation of the patient and postoperative considerations. The chapter following is probably worth the price of the book, and this is entitled The Bad Risk Patient. A better selection of patients for elective surgery would cause a lot less grief among surgeons. There is a great deal to the axiom that the "better the tools the better the mechanic" and this is stressed in the third chapter, along with the warning of the dangers of foreign bodies left in the abdomen. The subject of the danger of blood transfusions has been played up so much recently that this chapter only serves as more warning. The next fourteen chapters make up a multitude of possible errors that can occur while doing surgery of the various systems such as the head, thorax, breast, abdominal, gynecologic and orthopedic regions.

The last chapter concerns medico-legal problems as related to surgical practice. This book is a veritable gold mine for information on surgical safeguards, and as far as I know is the only book of its kind written in the English language and is invaluable to the practicing surgeon.

P. K. Burwell.

Synopsis of Diseases of the Heart and Arteries. By George R. Herrmann, M. S., M. D., Ph. D., F. A. C. P., Professor of Medicine, University of Texas; Director of the Cardiovascular Service, John Scaly Hospital; Consultant in Vascular Diseases, U. S. Marine Hospital. Third edition. Cloth. Price, $5.00. Pp. 516, with 103 illustrations and 4 color plates. St. Louis: The C. V. Mosby Company, 1944.

The third edition of this popular text is no longer a brief synopsis but has evolved into a rather complete 516 page discussion of the heart and arteries. The new edition has added most of the new findings of the past three years and has included much of the new war literature. The first three chapters of the book are of benefit to the student who is for the first time coming in contact with cardiology but is rather monotonous repetition to the more advanced student. The radiologic study of heart disease is an excellent refresher for this much neglected method of diagnosis. The discussion on electrocardiography is another excellent summary of the subject and to this chapter there has been added an appendix on new data devised from unipolar central terminal precordial leads. The chapter on hypertension and allied disorders is a gem in simplification of a difficult subject. There is no outstanding change on the discussion of the general cardiac disorders. The new developments in the treatment of peripheral vascular disease have been added, along with the new military entities such as immersion foot. The book is compact and the print is large enough to be restful reading. The diagrammatic illustrations are magnificent and the photographs are good. The index is very poorly arranged and very inadequate which makes it difficult to find a good many subjects, one of them being beriberi heart disease. A synopsis is meant to be a quick reference book but if the index is not complete its usefulness is handicapped by the time used up in finding the material wanted.

P. K. Burwell.

Medical Care—At the present time public medical care functions are being discharged through a host of agencies at all levels of government. The effective operation of a national program requires that at each level of government—federal, state, and local—administration, or the supervision of administration, should be by a single responsible agency. Because of their strategic position in the framework of government, their record of successful administrative experience, and their interest in prevention as well as cure of disease, health agencies are believed best fitted to discharge the responsibilities incident to administration of a nation-wide medical care program. However, any agency that expects to carry major responsibilities in a program of such magnitude and complexity should begin preparing itself now for the position it intends to occupy.—*Mountin, Am. J. Pub. Health, Dec. '44.*

AMERICAN MEDICAL ASSOCIATION NEWS

POINTS TO INEFFECTIVE PROGRAM OF HEALTH SERVICE IN SCHOOLS

HUNDREDS OF AMERICAN CITIES SHOULD FOLLOW BOSTON'S EXAMPLE IN FINDING WEAKNESSES AND CORRECTING THEM, JOURNAL SAYS

Declaring that on a nationwide basis school health service is probably the spottiest and least effective branch of standard recognized public health procedure, The Journal of the American Medical Association for December 23 advises that hundreds of American cities should determine the weaknesses in their school health education programs and publicize them, just as Boston has done recently, and then take steps to correct them. The Journal says:

"From Boston, renowned as a center of culture, comes the disturbing news that health education in the Boston schools is at a low ebb and health practices in these same schools leave much to be desired. These are the claims made by the Strayer School Survey.

"Among the criticisms the following are significant: 'There is no excuse for teaching in the third grade the same health material presented in the first grade.' Health teaching in the Boston schools is characterized as 'halting, limited, superficial and indifferent' and the Strayer surveyors find it 'difficult to understand the policy that started health instruction in the schools and have made no provision for textbooks for the pupils.' Many of the health lessons are characterized as writing exercises rather than health lessons: 'The teacher dictates from a book and the children write what is dictated. With this sort of thing going on it is not strange that public education is sharply criticized in its methods.'

"Health examinations are made in about one minute's time per pupil. The Strayer report suggests eliminating the requirement that all pupils be examined every year and that more thorough examinations at longer intervals be substituted with special attention given to all new pupils, those competing in sports and those referred for special attention by teachers or nurses. Special attention should be given to pupils returning to school after illness.

"Not only is health instruction and health examination practice unsatisfactory, but first aid and health rooms in some schools are found inadequate. The school plant and its operation also are criticized:

> The school plant should be the place that exemplifies all the best that we know in the field of health. This is not the case in Boston. Children in the Boston schools may study the value of fresh air and the importance of good ventilation. But in one school there were double windows still on in May. In another the windows cannot be opened because of broken window cords or chains.
>
> In still another there are so many plants on the window sills that the windows are not opened for fear of chilling the plants or injuring them. Many of the school assembly halls are poorly ventilated. One of them is grossly overheated regularly. The children have their eyes tested for vision and are sent to the oculist, but in some of the old buildings the light is very faulty and artificial lighting is very inadequate.

"In certain schools children are not allowed to go to the toilet or even get a drink without the teacher's permission. In some bubble fountains the water is so hot and bad tasting that children go without it. Washing of hands is discouraged because of lack of facilities. Not one container for soiled paper towels was found. In some schools toilet rooms were dirty and uncared for. Children study nutrition, but the lunchrooms offer menus that are largely carbohydrates.

"Recalling that Boston was a pioneer in health education, physical education and recreation, the Survey reports 'these three areas, once so bravely pioneered, have not been maintained at the high level that might be expected.'

"The story about Boston and its schools is significant because in place of Boston one might put the names of a large number of American cities. This condition, which in Boston is at least being studied as a first step toward providing remedies, exists in too many cities, large and small, where it is not even recognized. There are, of course, American communities, both large and small, in which school health work is done

on a high level, where school health authorities are constantly on the alert and where health departments and the schools cooperate effectively for the health of school children. School health conditions in the three principal fields, namely health instruction, health examination and guidance and healthful living practice, range from the very best to the very worst according to locality. However, on a nationwide basis school health service is probably the spottiest and least effective branch of standard recognized public health procedure.

"The medical profession and the educational profession are alert to the situation. For thirty-three years a joint committee of the National Education Association and the American Medical Association has been active in the field of health problems in education. Its report 'Health Education' is a standard textbook in this field today, as it was a pioneer in its first edition in 1925. The American Association of School Administrators in its 1942 Yearbook recognized the importance of health in the schools and addressed the book directly to school administrators, recognizing in them the key to improvement in health conditions in the schools. Four of the scientific sections of the American Medical Association, cooperating with the Joint Committee and with four sections of the American Public Health Association and with the Association for Health, Physical Education and Recreation, have issued a brief statement on suggested school health policies which has been widely used by school administrators and in teachers' colleges. There is substantial agreement between the two great professions, medical and educational, concerned with health problems in education. Principles have been recognized and standard practices are well defined. Local communities need to apply these principles. Such studies as the Strayer Survey in Boston and the publicity given to them are constructive stimuli to improvement in the school health field. If the nation is going to have the physical fitness which military authorities, physicians and educators now demand, the basis for such fitness must be the good health of our young people. These young people are now being delivered to our schools in a better state of health than ever before. The schools must face the responsibility of delivering them back to the community at the end of their educational experience in a state of health better, if possible, than at the beginning but certainly no worse. Hundreds of American cities could profitably follow Boston's example, bringing to light and publicizing their own weaknesses and then taking steps to correct them."

SAY PHYSICAL RECONDITIONING HELPS CHEST SURGERY PATIENTS

STARTING THE PROGRAM SOON AFTER OPERATION RETURNS SOLDIERS TO FULL DUTY AT EARLY DATE, THREE ARMY DOCTORS REPORT

A well planned physical reconditioning program, started as soon as possible after the operation, contributes greatly to the success in the management of chest surgery patients, Colonel John B. Grow, Major Omer M. Raines and Major Ora L. Huddleston, Medical Corps, Army of the United States, declare in The Journal of the American Medical Association for December 23. Their report is based on results obtained in an Army hospital which showed that a high percentage of patients participating in the program return to military duty at an early date in excellent physical condition.

"One of the major developments in the field of surgery during the present war," the three men say, "has been the general recognition of the value of a reconditioning program. The term 'reconditioning program' is a broad one and covers the care of the patient from the time of his operation until he is physically fit to return to his organization. The goal of this program may be simply stated as the restoration of the patient to a normal physical and mental state of health . . . To be successful this program must be initiated as early in the convalescent period as possible and requires the close cooperation between the surgeon, the physical therapist, the occupational therapist and the physician in charge of reconditioning . . ."

Twenty-two soldiers with chronic nontuberculous empyema completed treatment during the period of the study which lasted twenty-one months. They were transferred to a reconditioning service as soon as they had been without fever for a sufficient period to take part in the program, usually from ten days to two weeks.

"As the patient's condition permits," the authors say, "breathing exercises, calisthenics and outdoor drills and marches are engaged in. Vigorous physical activity has been found to be of definite benefit in hastening the obliteration of empyema and lung abscess cavities. The usual experience is that by the time the empyema or lung abscess cavity has disappeared the patient has been restored to his normal weight, stamina and strength . . ."

Of the 22 patients, 18 were returned to duty and 4 were discharged from the service.

Of 31 patients treated by surgical removal of a portion of the lung, 25 were returned to duty with an average of ten weeks of hospitalization following surgery. Their reconditioning program was started with breathing and shoulder exercises in the wards on the seventh postoperative day.

"Unfortunately," the three doctors say, "it is not possible to compare the results obtained before and after the initiation of the reconditioning program at this hospital, owing to the fact that the cases are not comparable and surgical technics have been changed during this period. However, the rapid response of this group of patients to the program, the excellent physical conditioning obtained and the high percentage of cases returned to military duty have been striking . . ."

SAY VIRUS DISEASE FROM PIGEONS MAY BE A CAUSE OF SPORADIC ATYPICAL PNEUMONIA

In view of the high percentage of pigeons in the United States infected with ornithosis, a disease similar to psittacosis which is contracted from psittacine birds, such as parrots, and since countless individuals are daily exposed to this potential reservoir of infection, it is probable that the virus of ornithosis may be responsible for many sporadic cases of primary atypical pneumonia which pass unrecognized, three physicians declare in The Journal of the American Medical Association for December 23.

Lieutenant David C. Levinson, Medical Corps, A. U. S.; Lieutenant John Gibbs, Medical Corps, A. U. S., and Joseph T. Beardwood, Jr., M. D., Philadelphia, report 6 sporadic cases of ornithosis the diagnosis of which was confirmed by laboratory tests. A history of direct contact with pigeons was obtained in 2 cases and in the others there was daily exposure to pigeons in the immediate vicinity of the homes. They point out that it is known that infection may occur through the inhalation of the infected excreta of pigeons blown about as dust. Six of 14 pigeons captured in Philadelphia were found to have positive tests for ornithosis.

EXCRETION OF VIRUS OF POLIOMYELITIS

In a study of the duration of excretion of the virus of infantile paralysis in the stools of 61 patients, it was found that the excretion extends into the seventh and eighth weeks after the onset of the disease in an appreciable percentage of cases, which is contrary to the prevalent concept that stools commonly contain the agent for three to four weeks following the onset but rarely thereafter, three Yale University School of Medicine investigators report in The Journal of the American Medical Association for December 23. They say that the results provide no evidence for the existence of persistent carriers of poliomyelitis virus but it is possible that failure to demonstrate such carriers was due to the relatively small number of subjects studied.

The study was conducted by Dorothy M. Horstmann, M. D., Robert Ward, M. D., and Joseph L. Melnick, Ph. D., New Haven, Conn.

They found that 61 per cent of the patients excreted virus during the first two weeks after onset of the disease, 50 per cent during the third and fourth weeks, 27 per cent at the fifth and sixth weeks, 12.5 per cent at the seventh and eighth weeks. Between the ninth and twenty-fourth weeks virus was detected in only one of 52 specimens tested, this positive result coming from a boy 8 years old in the twelfth week of the disease.

INDUSTRIAL REHABILITATION OF VETERANS

In the absence of an intrinsic medical department, some local Veterans' Administration office must function to evaluate physically and mentally the proper placement of the veteran in industry and this agency is

urgently needed now, J. F. Johnson, M. D., Trenton, N. J., declares in The Journal of the American Medical Association for December 23. Dr. Johnson's paper, presented with the cooperation of H. V. Hoffman, of Trenton, is based on personal observations as a physician with one of the divisions of General Motors Corporation. He also says the Veterans' Administration should be informing industrial plants as to what to do with a veteran who has either an emergency illness or needs medical or welfare help.

ANOTHER CASE OF VIRUS DISEASE TRACED TO PIGEONS IS REPORTED

WISCONSIN DOCTOR SAYS ORNITHOSIS OFTEN MAY BE CONFUSED WITH VIRUS PNEUMONIA DUE TO LACK OF PROPER DIAGNOSTIC FACILITIES

Further evidence that human ornithosis, a disease contracted from pigeons and similar to psittacosis or parrot fever, is more prevalent than is commonly believed and may be present in a fairly high percentage of the recently increasing number of cases diagnosed as virus pneumonia is presented in The Journal of the American Medical Association for December 30, together with a report that penicillin proved effective in treating this disease.

F. E. Turgasen, M. D., Manitowoc, Wis., who presents the report, points out that his experience with penicillin seems to bear out the investigations recently reported from the Mayo Clinic in which the drug was definitely curative in a series of experimentally produced ornithosis infections in mice. As he says, the mortality rate from the disease, particlarly in the older age group, has been consistently high, and treatment with the various sulfonamides has been largely without effect.

Another important point brought out by Dr. Turgasen is that the chief difficulty in establishing the diagnosis of the disease is the lack of convenient laboratory facilities in America for making the necessary tests on the patients' blood serum. He says that "As far as I could ascertain, the laboratory of Dr. K. F. Meyer at the University of California is the only one on this continent that does this work."

Discussing the disease, he says that "Ornithosis and psittacosis are strikingly similar in their clinical manifestations and probably differ only in the source and causative virus. The onset is rather gradual and in many features resembles the onset of typhoid except that diarrhea is not present and an atypical pneumonia with a dry, irritating, unproductive cough soon becomes a prominent feature . . ."

The case reported by Dr. Turgasen is that of a man aged 43, who was a pigeon fancier and has had a loft of homing pigeons in his back yard for a number of years. During the past few months, several of the pigeons had died after a short illness with cough, wheezing, ruffled feathers and in some cases diarrhea. He had been caring for the pigeons himself and had used no precautions in handling the dead or ill birds. Seven days before the onset of his illness, he cleaned the loft and inhaled a considerable amount of the stirred up dust. He was treated with penicillin for a period of seven and one-half days, with no other medication being administered. He was admitted to the hospital on August 23 and was discharged on September 2 to his home, where he convalesced, returning to light work two weeks later. He apparently was fully recovered one month after the onset of his illness.

The diagnosis of the disease was confirmed by tests made by Dr. Meyer in San Francisco. Four pigeons were taken from the patient's pigeon loft and examined at the Mayo Clinic laboratories. Two of them were found to have enlarged spleens and from one of them the virus of ornithosis was recovered and identified.

PRIMARY CANCER OF THE LUNG

An otherwise fatal disease, primary cancer of the lung, can be satisfactorily treated by surgical removal of the entire lung, William Francis Reinhoff, Jr., M. D., Baltimore, advises in The Journal of the American Medical Association for December 30. Surgical measures short of total removal of the lung are not efficacious, he says. Postoperative mortality and longevity are at least as good, if not better than those following the same treatment for cancer of other organs of the body.

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Miscellany

REPORT PENICILLIN X EFFECTIVE IN TREATMENT OF GONORRHEA

A SINGLE INJECTION OF A NEW VARIETY OF THE DRUG CURED 64 OF 68 PATIENTS TREATED, FOUR WASHINGTON INVESTIGATORS SAY

The successful treatment of gonorrhea with a single injection of penicillin X, a new variety of the drug, is reported in The Journal of the American Medical Association for December 16 by Henry Welch, Ph. D., Lawrence E. Putnam, M. D., William A. Randall, Ph. D., and Robert P. Herwick, M. D., Washington, D. C.

As the four investigators point out, this parallels a recent report that gonorrhea had been successfully treated with single injections of regular or commercial penicillin incorporated in a beeswax-peanut oil base. In their study the Washington men treated 68 patients with gonorrhea, most of whom were sulfonamide resistant, by a single intramuscular injection of 25,000 units of penicillin X.

"The group consisted," they say, "of 35 males and 33 females. Our criterion of cure was three negative cultures obtained one, three and five days after treatment had been completed, although in some cases, because of menses or other factors, cultures were taken at greater intervals and over a longer period of time.

"Sixty-four patients, or approximately 94 per cent of those treated, were cured. For comparative purposes a group of 58 patients with gonorrhea (31 males and 27 females) were treated with a single intramuscular injection of 25,000 units of commercial penicillin. Using the same criterion, 37 patients, or approximately 64 per cent of those treated, were cured. It is of interest that 3 of the patients in whom we failed to obtain a cure with commercial penicillin were cured by a subsequent treatment with a single injection of 25,000 units of penicillin X. . ."

Studies of the blood concentrations of the drug were made on 7 patients treated with penicillin X and on 8 treated with commercial penicillin. These concentrations were determined one-half hour, one hour and two hours following intramuscular injections. During the first two hours after treatment, a consistently higher concentration of penicillin X was maintained in the blood. Studies of the excretion of the drug in the urine were made over a period of eight hours on 9 patients, 4 treated with penicillin X and 5 with commercial penicillin. During the first two hour period 59 per cent of the penicillin X injected was excreted, as compared with 68 per cent of commercial penicillin. After eight hours the total excretion of penicillin X was 71 per cent as compared with 80 per cent of commercial penicillin.

"Further studies," the four men say, "are in progress using larger doses of penicillin X in a single intramuscular injection to determine its efficacy and rate of excretion at higher levels.

"Although the number of cases reported here is small, if further work substantiates the fact that a large proportion of cases of gonorrhea can be cured with a single intramuscular injection of penicillin X, the public health control of this disease, which has been materially affected by the use of commercial penicillin, will be further facilitated."

NEXT ANNUAL MEETING
BIRMINGHAM
APRIL 17-19, 1945

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BACKGROUND

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BRONCHIECTASIS

J. O. LISENBY, M. D.
Atmore, Alabama

This subject has been presented only twice before the Association in annual session during the past 20 years, and since the mortality rate from the disease is greater than that of pulmonary tuberculosis, one feels that more attention should be paid it by the practitioner in general practice. "Bronchiectasis is a chronic, progressive disease of the bronchi, or bronchioles, characterized pathologically by dilatation of the tubes and an inflammatory reaction in their walls, clinically by a chronic cough and the expectoration of large quantities of purulent sputum."[1]

Rene Laennec in 1819 first described the clinical and pathological findings of bronchiectasis, but very little else was done in connection with this disease until about the last 20 years, when the use of the bronchoscope and iodized oils in diagnosis and treatment has considerably added to our knowledge of the condition, and made the treatment a great deal more successful. Surgery, including lobectomies and pneumonectomies, began to be employed about twelve to fifteen years ago, with only slight success; but within the past five years, the mortality rate has decreased to between two and five per cent. When it is remembered that 78 per cent of the cases treated nonsurgically die within an average period of twelve years,[2] the present mortality rate from surgery is remarkably low.

Bronchiectasis may be either congenital or acquired. Only the acquired type is considered here. The disease most commonly follows acute respiratory diseases, such as influenza and pneumonia, or even sinusitis.

The first symptom is a chronic, productive cough, but, as the severity of the condition increases, there may be pallor, anorexia and weakness. The physical signs usually include clubbing of the fingers and toes. Ordinary methods used in the examination of the chest, such as auscultation, percussion and simple x-ray, do not always confirm the diagnosis. Positive diagnosis of bronchiectasis is made only with the aid of a bronchoscope and the removal of the secretion from the "bronchiectatic septic tank,"[3] followed by the introduction of an opaque medium, by means of which a roentgenogram will show the definite bronchiectatic cavities and dilatations of the bronchi and bronchioles involved.

General treatment includes the use of supportive measures; special therapy calls for the use of the bronchoscope in removing secretions and the introduction of iodized oils, followed by surgery.

For a period of about four years, the author has been diagnosing and treating bronchiectasis, as well as other diseases of the chest, with the aid of the bronchoscope. Considerable relief and even cures may be afforded early cases of bronchiectasis by this means, and alleviation and relief may be secured in advanced cases, refusing surgery, while surgery is made safer by frequent

Read before the Association in annual session, Montgomery, April 18, 1944.

1. Cecil, R. L.: Textbook of Medicine, ed. 4, Philadelphia, W. B. Saunders Company, 1937, p. 851.

2. Perry, K. M. A., and King, D. S.: Bronchiectasis; a Study of Prognosis Based on a Follow-Up of 400 Patients, Am. Rev. Tuberc. 41: 531-548 (May) '40.

3. Jackson, Chevalier, and Jackson, C. L.: Bronchoscopy, Esophagoscopy and Gastroscopy, ed. 3, Philadelphia, W. B. Saunders Company, 1934, p. 320.

bronchoscopic aspirations of large bronchiectatic cavities before operation.

Four cases which are typical of the usual history and course of the disease are presented:

Case A is a white female of 30 years, previously treated by another physician who had confined her to bed and isolated her from the rest of her family for about one month following a diagnosis of advanced pulmonary tuberculosis. On examination, numerous bronchiectatic cavities in the right lower and middle lobes were discovered. This condition dated from bronchial pneumonia following measles at the age of three years. The patient had thus suffered from bronchiectasis for 27 years and was so weakened that she was unable to do any type of work whatever. The right lower lobe and lower half of the right middle lobe were removed by Dr. Alton Ochsner of New Orleans. She is now able to do her housework and live a normal life.

Case B is a white female of 25 years who had undergone a tonsillectomy under ether anesthesia under the care of another physician about four months previously. Since that time her weight had decreased from 125 pounds to 72 pounds, and she had a severe cough which even complete narcotization failed to relieve. The odor of the large amount of expectorated material was so objectionable that her attendants could hardly stay in the room with her. Bronchoscopic aspiration, with the introduction of iodized oil, showed in an x-ray film several bronchiectatic cavities in the right lower and middle lobes. Twenty two bronchoscopic treatments, with aspiration of the purulent matter in the cavities and its replacement with iodized oil over a period of 18 months, effected enough relief that the patient ceased coughing and regained her normal weight of 125 pounds. During the past two years she has had no symptoms of the condition, although the bronchiectatic cavities have not entirely disappeared.

Case C is a white male of 22 years who was examined about six months following an attack of influenza. He had a productive cough and was in a weakened condition. Bronchoscopic examination and x-ray revealed an abscess about 2½ cm. by 4 cm. in the right lower lobe. Continued bronchoscopic treatment effected mild to moderate improvement, and the patient refused surgery. He disappeared, and subsequent inquiry revealed the fact that he is a member of the armed forces of the United States.

Case D is a white male of 31 years, with a chronic cough and considerable weakness, who had been subject to sinusitis for several years. He was found to have a large bronchiectatic abscess 3 cm. by 5 cm. in the posterior portion of the left lower lobe. Numerous bronchoscopic aspirations and the introduction of iodized oils, with general supportive measures and rest, improved this patient considerably; following a lobectomy of the inferior lobe of the left lung by Dr Alton Ochsner, this patient is in excellent health and able to do general labor.

SUMMARY

1. Considering the small amount of danger associated with bronchoscopic examinations and treatment, where it is not contraindicated, it is felt that all patients with chronic coughs should have a bronchoscopic examination and a bronchogram.

2. Considerable relief may be afforded a large percentage of people suffering from bronchiectasis by the various measures mentioned.

3. Bronchoscopic aspirations in cases of chronic bronchitis, and in patients suffering from chronic cough immediately following respiratory infections, may exert a prophylactic influence, even more successfully than has been believed in the past.

4. Lung surgery in patients suffering from chronic bronchiectasis is recommended with a great deal more enthusiasm and optimism today than was the case five years ago, due to the advance in bronchoscopic measures, as well as improvement in surgical procedures involved, since the mortality rate has been lowered to the point where it is as safe as surgery in some other parts of the body.

DISCUSSION

Dr. Charles J. Donald, Jr. (Birmingham)—Bronchiectasis is a severe disease that carries not only a high mortality but is also a disease with much morbidity. The patients have big dilated bronchi which are in reality septic pools of pus. These septic pools are a source of much foul smelling sputum and cause frequent colds and so-called bouts of pneumonia. All of this constantly undermines these patients and makes their life often unbearable. Hemoptysis is more common in bronchiectasis than in pulmonary tubercu-

losis and occurs in over 50 per cent of the cases of bronchiectasis.

Quite frequently patients with bronchiectasis have fairly normal plain x-ray films of their chests. There is only one positive way to make the diagnosis of bronchiectasis and that is by making bronchograms with iodized oil. Not only is it possible to make the diagnosis but a definite and accurate localization of the disease may also be made by this means.

There is only one cure for bronchiectasis, once it is definitely established, and that is the surgical removal of the diseased lobe or lobes.

Cases

1. A 24 year old white male who gave a 4 year history of colds, cough, hemoptysis and repeated attacks of pneumonia. The condition was getting progressively worse and he had been unable to work for a year. He was so weak and dyspneic that he could hardly walk upstairs. Each day he would raise about a tea cup of foul smelling sputum that usually had a fair amount of blood in it. He had been seen by 15 doctors and had remained in hospitals for a total of 99 days on 3 admissions without the diagnosis of bronchiectasis having been made.

Bronchograms revealed bronchiectasis of his left lower lobe. Lobectomy was advised and done last June under intratracheal cyclopropane anesthesia. The lobe was removed and the hilar structures were individually ligated with catgut. Silk was used for the bronchus. Convalescence was uneventful for ten days when he developed an empyema which was drained. He has gained 50 pounds since his operation, is back at work, has no cough and is not the least bit dyspneic.

2. Twenty-eight year old white female who had been subject to frequent colds since she had whooping cough at the age of five. Three years ago she had influenza and pleurisy. Her cough has been much worse since that time. She has been gradually losing weight and strength. She was raising about a cup of sputum daily, containing no blood. Bronchograms revealed bronchiectasis of the left lower lobe. She was bronchoscoped by Dr. Jim Ferry who found the left lower lobe bronchus to be reddened and inflamed.

Lobectomy was advised and performed last August. The seventh rib was first resected. However, there were so many dense adhesions between the lung and diaphragm that it was necessary to resect about 5 inches of the 8th rib also. Lobectomy was then carried out and the hilar structures individually ligated. She had an uneventful convalescence. At present she is gaining weight, has no cough or dyspnea and feels fine. She has a new job which is that of doing hard labor in a saw mill.

Comment

In conclusion I wish to reiterate that there is only one way to make a positive diagnosis of bronchiectasis and that is by making bronchograms using iodized oil.

The second point I would like to reemphasize is that there is only one cure for bronchiectasis once it is definitely established and that is the surgical removal of the diseased lobe or lobes.

PLANNING FOR MEDICAL CARE IN THE POSTWAR PERIOD

WITH PARTICULAR REFERENCE TO ALABAMA

JOHN NEWDORP, M. D.
Surgeon (R), U. S. Public Health Service
Atlanta, Georgia

The history of the movement favoring what is termed the socialization of medicine is a long one but it is safe to say that at no time has this movement received the attention it is getting today. The first general drive for compulsory health insurance was conducted by the American Association for Labor Legislation and was started in 1912. Public interest in this subject has had its cycles but the general trend has been upward. This interest in medical care problems has been stimulated from time to time by such reports as those of the White House Conference of 1930[1, 2] and those of the Committee on the Costs of Medical Care.[3] Further interest was developed by social security legislation, the appearance and growth of voluntary hospital and medical care insurance, and to a certain extent by advances in medicine which have tended to increase the costs of medical service. The shortage of

This article has been cleared for publication by the U. S. Public Health Service. The opinions and views set forth in this article are those of the writer and are not to be considered as reflecting the policies of the U. S. Public Health Service.

The article is to be published in three installments. The second and third parts will appear in March and April, respectively.

1. White House Conference on Child Health and Protection, Preliminary Committee Reports, New York, The Century Co., 1930.
2. White House Conference, 1930, New York, The Century Co., 1931.
3. Committee on the Costs of Medical Care, 27 volumes, Chicago, Chicago University Press.

physicians caused by the war and the Emergency Maternal and Infant Care Program of the Children's Bureau have also been current factors in directing public attention to medical care problems. In recent years the matter has received either favorable or unfavorable attention in almost all popular magazines, it has been the subject of innumerable newspaper editorials, it has been considered at some length in books written for the lay public, and is being discussed on the radio.

At the present time the medical care provisions of proposed social insurance legislation form the center of much of this discussion and controversy. These provisions have been vigorously opposed by organized medicine and are receiving strong support from such organizations as labor unions, which, while not as vocal, probably have tremendous influence at the polls. Regardless of the merit or lack of merit of this legislation, it should be realized that to a great extent *this legislation is not the cause of the interest being shown at the present time but rather an outgrowth of it. Defeat of this measure will in no wise alter those conditions which have been responsible for the wide support which it is receiving*, and we can be sure that until these conditions are altered similar legislation will be proposed again and again.

Repeated emphasis has been given the fact that American medicine has made tremendous progress in recent decades and that its methods and facilities are unequaled. However, the fact that it has made such forward strides does not mean that it has reached or is near reaching its final objective. In evaluating our accomplishments, we do well to cease comparing our attainments with those of other nations and compare what American medicine has accomplished with what it could accomplish if all the knowledge and skill it has now acquired could be applied to the fullest extent to all individuals. *The lack of this application of present day knowledge to every person in this country is the basic problem which must be solved.* This problem is largely an economic one and it is paradoxical that the rapid progress of medicine, with the increased use of hospital and diagnostic facilities that it has necessitated, has made this problem an increasingly acute matter.

It is this basic problem which the medical profession must solve in the immediate future. If it does not do so, it must be prepared to accept such solutions as the public may thrust upon it, regardless of their merit and suitability. Schemes for meeting this problem are often termed postwar plans but this is a misnomer as they must be developed immediately. It is, of course, true that it will probably be found necessary to wait until the postwar period to put part of the total plan into action but the development of these plans and the process of putting them into operation to as wide an extent as is compatible with a wartime economy is an urgent present need. In considering this subject of planning for medical care in the future, physicians do well to consider the objectives of medical care, evaluate the present situation in comparison with these objectives, attempt to determine some of the factors which are responsible for failure to reach these objectives and, finally, in the light of the knowledge gained from these factors, make plans for the future.

I. THE OBJECTIVE OF MEDICAL CARE

The obvious objective of any health and medical care program is to provide every individual with that information and medical service needed to insure a maximum of health and well-being. In the past the medical profession has tended to look upon the attainment of this end as a matter of concern to the profession and the individual only. However, as is pointed out in the introduction, the general public has shown increasing interest in the matter and is inclined to consider medical care not only as an individual problem but as a social one. In the absence of any definite program on the part of the medical profession, it can be expected that the public will show an increasing tendency to take matters in its own hands and initiate a program regardless of the profession's wishes in the matter. This tendency is well evidenced in a Fortune public opinion poll in which 74 percent of the voters were convinced that the Federal Government should collect enough taxes after the war to provide medical care for everyone who needs it. The majority who desired medical care was actually greater than the majority calling for old age pensions and jobs for all who are willing to work.[4]

4. Social Security For All, Fortune 26: 12 (July) 1942.

This attitude of the public seems based on the opinion that the medical profession has not reached the goal of adequate medical care for every individual despite the fine quality of care that is available to certain population groups.

II. THE PRESENT SITUATION IN ALABAMA

The objective having been stated, it is necessary to determine, insofar as is possible, the progress that has been made in meeting it. This evaluation is difficult because the results that would be obtained if the objective were reached are not known. It is, therefore, necessary to accept certain theoretical standards established after careful study and also to compare selected Alabama vital statistics with those of the nation as a whole and with outstanding records which have been made in certain sections of the country.

It is likewise advisable in making an evaluation to rely chiefly on figures for the prewar years of 1940 and 1941. These figures are more readily available and do not reflect abnormal conditions incident to the war. Some of the rates quoted have improved since 1940 and 1941 but in most cases there has been an improvement on a nation-wide basis. It is also important to keep in mind that some of the data presented apply to the state as a whole and that conditions in rural areas are usually far more unfavorable.

Vital Statistics: Alabama has a relatively high infant mortality rate (deaths under one year, exclusive of stillbirths). In 1941 the national rate was 45.3 (per 1,000 live births), the Alabama rate was 59.5.[5] (See Figure 1.) Adequate care could probably reduce these rates to 30 per thousand live births and perhaps to lower figures.* The rate for stillbirths in 1941 was 29.9 (per 1,000 births) for the United States but 37.3 for Alabama.[5] Ten states reported rates below 20 per 1,000 births.† Alabama's maternal mortality rates also compare unfavorably with those of the nation as a whole. In 1941 the national rate was 31.7 per 10,000 live births, the Alabama rate was 52.5. (See Figure 2.) Five states reported rates below 20.[5]

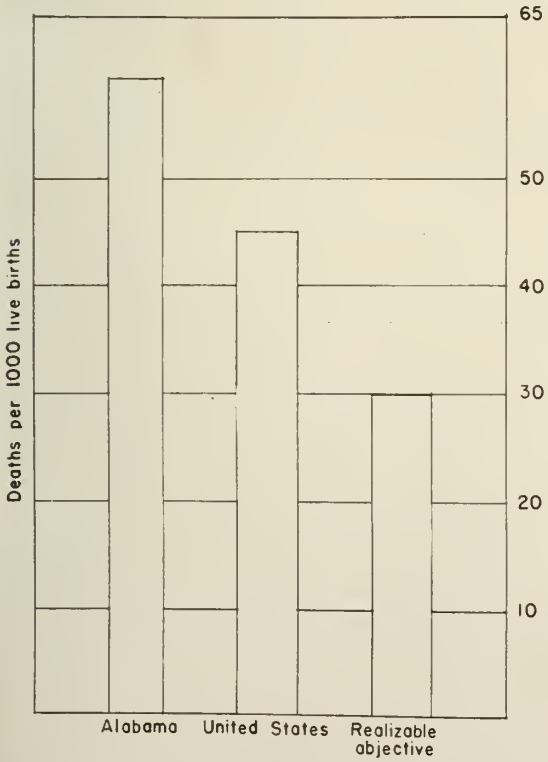

Fig. 1. Infant mortality rates (deaths under one year, exclusive of stillbirths).

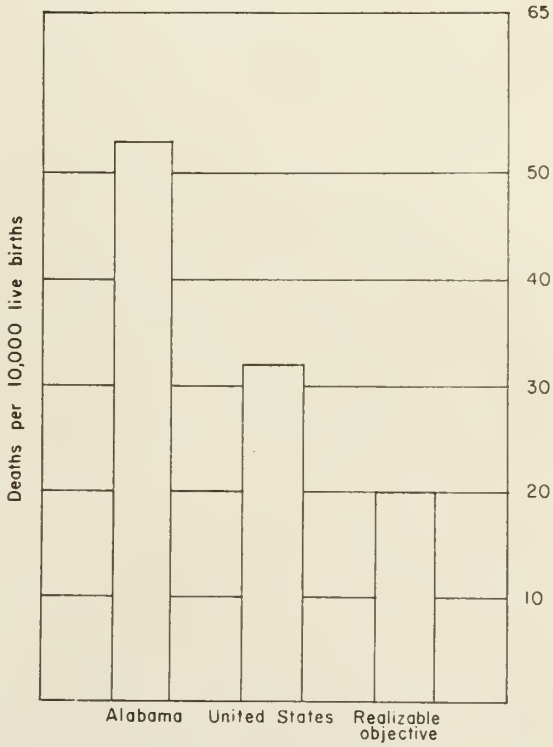

Fig. 2. Maternal mortality rates (per 10,000 live births).

5. Yerushalmy, J.: Maternal and Infant Mortality in the United States, 1941, The Child 7: 110 (February) 1943.

*Minnesota and Connecticut reported rates below 30 per 1,000 live births for 1942.

†Definition of stillbirth varies from state to state and these figures are therefore not strictly comparable. (See Yerushalmy, J., Stillbirth and Maternal Mortality Rates, Am. J. Pub. Health 34: 889 (August) 1944.)

Alabama has a difficult problem in the control of venereal disease. According to data based on examination of nearly two million selectees from 44 states, the rate of infection in Alabama was 28.2 per 1,000 whites and for Negroes 227.1. There were 526 deaths from syphilis in Alabama in 1941.[6] Although the national death rate from this disease in 1941 was 13.3 per 100,000 population,[6] Alabama's was 19.2.[7] The actual rate among both white and colored was lower in Alabama, and the adverse total rate is in part due to the racial composition of Alabama's population. The deaths from this disease do not reflect the devastating disability that this disease causes. Public health workers believe syphilis can be almost entirely eradicated, and that adequate treatment can prevent the disability and deaths that occur among persons contracting the disease. A further reflection of the seriousness of the problem is gained from the program recently initiated in Alabama in which all persons between the ages of 14 and 50 are required to submit to serologic tests for syphilis. In the three counties in which the survey has been completed,** tentative figures reveal a prevalence of 14.8 percent, the white rate being 2.2 percent, the colored 20.5 percent.[8] The eradication of this disease is apparently far from an accomplished fact, yet the full utilization and application of modern therapy could closely approximate this goal. Sweden, by means of an intensive program conducted over the course of many years, has reduced the prevalence to 4 100 of 1 percent although recent reports indicate an increased rate as a result of the war.

Tuberculosis is another disease which takes a large toll of lives annually. In 1941 the mortality rate from this disease was 52.1 per 100,000 population in Alabama as compared to a national rate of 44.5.[7] The 1,497 persons that died from this disease in 1941 were a small group compared to the number of persons disabled by the disease and the number in the early stages of the disease who were not aware of their plight.

The number of deaths occurring from typhoid fever, diphtheria, malaria and cancer are still capable of further reduction provided full use is made of present day knowledge of these diseases.

Supply of Physicians: In 1941 Alabama had a population of 2,832,961 and a total of 1,878 physicians. This represents a ratio of one physician per 1,507 population. The national level was one physician per 763 people, approximately twice as high. A standard of adequacy is considered to be one physician per 1,000 population[9] and on this basis Alabama has an adequacy of 66 percent.*

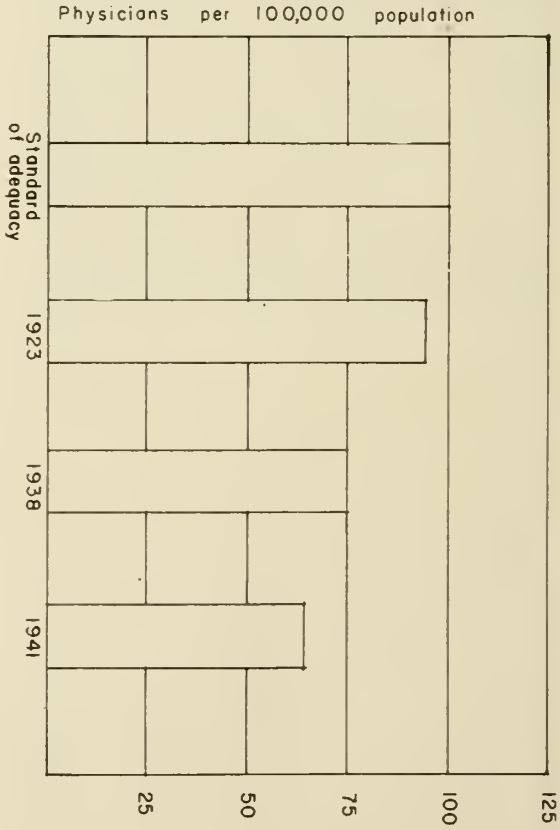

Fig. 3. Physicians per 100,000 population. Decline in Alabama from 1923-1941.

6. U. S. Department of Commerce, Bureau of the Census, Vital Statistics of the United States, 1941, Part II, Washington, D. C., U. S. Government Printing Office, p. 240, 1943.

7. U. S. Department of Commerce. Bureau of the Census, Vital Statistics of the United States, 1941, Part I, Washington. D. C., U. S. Government Printing Office, p. 34, 1943.

** Wilcox, Sumter and Lee.

8. Tentative figures secured from Alabama State Health Department.

9. Lee, R. I., and Jones, L. W.: The Fundamentals of Good Medical Care, Committee on the Costs of Medical Care, Publication No. 22, Chicago, Chicago University Press, 1933.

*It should be noted that this standard of adequacy for an area as large as a state does not imply that there should be one physician per thousand population in rural areas. Due to concentration of specialists and hospital facilities in urban centers, the ratio there will be higher and there will be a lower ratio in rural areas.

One of the most alarming trends in the entire picture of professional personnel in Alabama is the decline that has taken place over the course of years. In 1923 there was one physician per 1,064 persons, in 1938 one physician per 1,351 persons, and in 1941 one physician per 1,507 persons. This is demonstrated by Fig 3 in which the ratios are expressed in terms of physicians per 100,000 population. The 1938 issue of the American Medical Directory indicates that the national level at that time was 131 per 100,000 population or one physician per 763 persons, and that the ratio in the eastern states was 163 per 100,000 or one physician per 614 persons.[10] (See Fig. 4.)

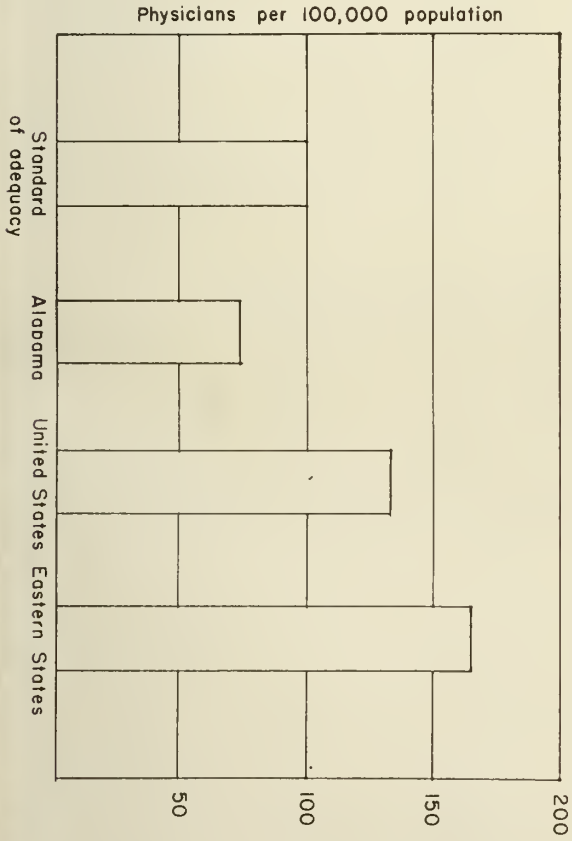

Fig. 4. Physicians per 100,000 population, 1938.

In making these comparisons, there is present a factor which cannot be ignored. Because of the decreasing number of physicians entering practice in Alabama, the age of Alabama's physicians is considerably above the average and there are many past 65 years of age. Physicians older than 65 years are on the average only about one-third efficient.[11] As a consequence, the one physician per 1,351 persons in Alabama in 1938 did not render as much service as the one physician per 518 persons in New York state. The plight of Alabama is shown by the fact that, in 1941, New York state, with 10 percent of the nation's population, received 18 percent of all medical graduates while Alabama, with about 2 percent of the nation's population, received only 1/3 of 1 percent of all medical graduates.[12]

On the basis of a need of one physician per 1,000 population, Alabama would need 2,833 physicians or an addition of 955. To reach the national average (as it existed in 1938), Alabama would need 1,835 additional physicians and to reach the level existing in the state of New York in 1938, Alabama would need an additional 3,585.

Dentists: In 1941 Alabama had a total of 595 dentists in active practice. On the basis that one dentist per 1,500 population is needed for adequate care,[9] this number is only 31 percent adequate and there is a need for 1,295 additional dentists. The rural picture is even more acute because dentists are for the most part concentrated in cities. This is demonstrated by figures for 1940. At that time there were 632 dentists registered in Alabama. A number of these had retired or did very little work. Of this total, 266 or nearly half were located in Jefferson, Montgomery and Mobile Counties, in which were located but 25 percent of the population of Alabama.

During 1942, the Dental Hygiene Division of the State Health Department examined 52,547 children between the ages of six and twelve years. Tabulations of results are as follows:

Total Children Examined	52,547
Children With Permanent Teeth Cavities	29,345
Children With Deciduous Teeth Cavities	30,656
Children With Teeth in Need of Cleaning	28,328
Children With Roots and Abscesses	11,311
Children With Malocclusion	1,419
Children With Six-year Molars Extracted	3,992
Children Whose Teeth Needed No Attention	7,754

10. Mountin, J. W.; Pennell, E. H., and Nicolay, V.: Location and Movement of Physicians, 1923 and 1928; General Observations, Pub. Health Reports 57: 1363 (September 11) 1942.

11. Pennell, E. H.: Location and Movement of Physicians; Methods for Estimating Physician Resources, Pub. Health Reports 59: 281 (March 3) 1944.

12. Perrott, G. St. J., and Davis, B. M.: The War and the Distribution of Physicians, Pub. Health Reports 58: 1545 (October 15) 1943.

Thus 85.2 percent of all children between the ages of six and twelve examined needed dental care. A survey of adults would undoubtedly indicate a far greater need for dental services.

Additional information is available in reports from clinics conducted by the Dental Hygiene Division. The average cost per operation on these children was 75 cents, the cost per child, $3.77. It was not possible to do a complete job but it is evident that the average number of operations required per child was in excess of five.

Hospitals and Facilities: In March of 1943 there were 94 registered hospitals in Alabama. Of these, 67 were general, 3 were for nervous and mental patients, 8 for tuberculosis patients, and there were 16 hospitals of all other types.* The total bed capacity of the 94 hospitals was 15,282.

General Hospital Beds: The 67 general hospitals had a bed capacity of 4,995. It is considered essential that there should be a *minimum* of 3.5 beds in general hospitals per 1,000 population. Using this formula, Alabama needs a total of 9,915 or an additional 4,820 beds. Interestingly enough, occupancy of Alabama's hospital beds in the prewar year of 1940, at which time it approximated 2.4 beds per 1,000 population, was less than in those states in which there were from 3 to as high as 6.2 beds per 1,000 population.[13]

Further evidence of the inadequacy of hospital facilities is the fact that in 1941 only 23.7 percent of deaths in Alabama occurred in institutions as compared to 40.8 percent in the entire nation.[14] Furthermore, in 1941, 61.2 percent of births in the United States occurred in hospitals, but in the same year only 24.8 percent of the births in Alabama occurred in institutions. In cities of 10,000 or less and rural areas, the percentage of hospital births for the United States was 30.0, for Alabama 8.4.[15]

*"Other" includes hospitals for military personnel, veterans, county and state law offenders and special institutions for care of indigents.

13. Hospital Service in the United States, J. A. M. A. 116: 1057 (March 15) 1941.

14. U. S. Department of Commerce, Bureau of the Census, Vital Statistics of the United States, 1941, Part II, Washington, D. C., U. S. Government Printing Office, p. 11, 1943.

15. U. S. Department of Commerce, Bureau of the Census, Vital Statistics of the United States, 1941, Part II, Washington, D. C., U. S. Government Printing Office, p. 14, 1943.

Tuberculosis Hospital Beds: A generally accepted standard for the need of hospital beds for tuberculosis is two beds for every death caused by tuberculosis.[9] During the three-year period 1940-1942, the average number of deaths from tuberculosis in Alabama was 1,446. In 1942 there were 505 hospital beds available to care for patients with tuberculosis or .39 beds per annual death. In the same year the nation had 1.45 beds per annual tuberculosis death, Massachusetts reported 2.75 beds per death, and New York, 2.50 beds per death.[16] (See Fig. 5.) On the basis of two beds per annual death, Alabama needs a total of 2,892 beds or an addition of 2,387 beds.

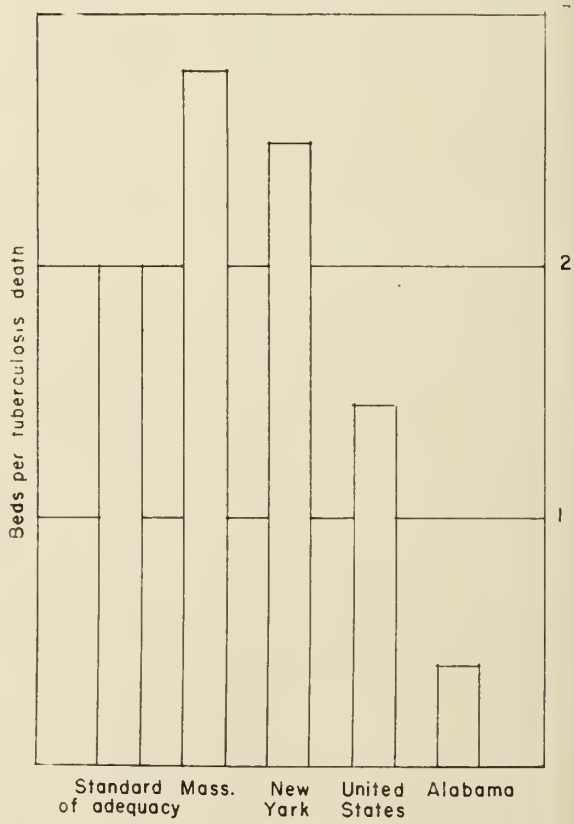

Fig. 5. Tuberculosis hospital beds.

Nervous and Mental Hospital Beds: In 1943 the State had available for mental cases 3 hospitals with a total bed capacity of 5,883. A commonly accepted standard for determining the number needed is 5 beds per 1,000 population. According to this criterion, Alabama needs a total of 14,165 beds for patients

16. Alabama Tuberculosis Hospitals, Montgomery, Alabama, Alabama State Planning Board, p. 6, 1944.

who have mental disease, or an additional 8,282 beds.

Health Departments: In 1943 all of the 67 counties in Alabama were served by public health departments. However, it must be pointed out that the mere presence of a unit in every county does not mean that a complete job is being done. In many counties the staff is inadequate and many positions are not occupied. Salaries paid are such that the best personnel for this type of work are often not secured and those who are the most capable are soon offered better positions elsewhere. The County Health Departments are dependent to a considerable extent upon local appropriations and these are usually lowest in those counties where public health activities should be maximal. Most health departments in the State suffer from poor and inadequate housing and poor location. The office of the State Health Department is a striking example of such poor housing. Administration on a county basis is not necessarily the best plan of operation and a larger staff with greater diversification of personnel could probably do a better job in several counties than individual partially staffed units.

Environmental Sanitation: One of the greatest health hazards in Alabama is the lack of environmental sanitation in rural areas. The Department of Agriculture's regional Inter-Bureau Committee for Post-War Programs estimates that there is need for 107,466 sanitary privies and that the water supply of 118,297 homes is unsafe.

This evaluation of the present situation in Alabama covers only a few salient features but it does serve to point out the tremendous gap which exists between a reasonable goal and conditions as they are. Few states provide better examples of those conditions to which politicians can point as a demonstration of the need for the socialization and federal control of medicine.

(To be continued)

THE VALUE OF THE PREEMPLOYMENT EXAMINATION IN AN INDUSTRIAL HEALTH PROGRAM

P. W. AUSTON, M. D.
Shawmut, Alabama

Physicians who have made industrial health their principal interest, fortunately, have been privileged to witness, in recent years, developments which have far exceeded their greatest expectations. Never before in the history of production has the health and welfare of the employee been so vital to the employer. Never before has it been so necessary to employ substandard labor to such an extent and place it on jobs that it is able to perform.

The term preemployment examination has been used in the title of this paper merely to bring out the point that we have found by experience that labor much prefers the term preplacement examination. In industry, it is much more admirable to leave the impression that examinations are given to new applicants for work for the purpose of determining their physical status so that they may be employed on a job that they can well afford to perform. During the present-day grave manpower shortage, with moderate care in placement, we can make good use of almost any reasonable normal applicant. However, there are still a few derelicts who cannot be gainfully employed in any industry. There are no workers who are suitable for all types of employment so between these extremes lies our placement problem.

In this event, the essential basis for health and accident control in industry is the physical examination. Without knowledge of the physical condition of the employee it is futile to attempt to develop facilities for the conservation and betterment of his health.

The preplacement examination, to be of value, should be thorough, and at this point I should like to explain to you our method of procedure at the medical department of the West Point Mfg. Co. and the Lanett Bleachery and Dye Works. By the manner in which we conduct preplacement examinations, we feel that the applicant, as well as the employer, derives 50% of the benefits and protection.

Read before the Association in annual session, Montgomery, April 18, 1944.

WEST POINT MANUFACTURING CO.
LANETT BLEACHERY & DYE WORKS
MEDICAL DEPARTMENT

Mill requests an examination of

Mr.
Mrs. for employment
Miss
and an appointment has been made for

day date time

Signed
(Failure to appear on time may delay your employment)

Applicant's Signature

Applicants for positions with the company are referred to the medical department for examination by the personnel directors at the various mills. They come to us with an appointment card which gives their name in full, date and time of appointment and is signed by them so that we may verify signatures. We have known of instances where physically sound persons presented them-

Mill **WEST POINT MANUFACTURING COMPANY** **LANETT BLEACHERY AND DYE WORKS** Serial No.

MEDICAL DEPARTMENT

Date Soc. Sec. No.

Name Age Date of Birth S. M. W. D.

Address Previous Occupation

Sex Race Height Weight Standard Wt.

Name of Consort No. of Children under 18 yrs.

Past Medical History

Measles	☐	Influenza	☐	Asthma	☐	Typhoid	☐	High B. P.	☐
Pertussis	☐	Pneumonia	☐	Hay Fever	☐	Malaria	☐	Low B. P.	☐
Scarlatina	☐	Pleurisy	☐	Skin Diseases	☐	Rheumatism	☐	Kidney Disease	☐
Diphtheria	☐	Empyema	☐	Pellagra	☐	Heart Disease	☐	Diabetes	☐
Insanity	☐	Vertigo	☐	Epilepsy	☐	Goitre	☐	Gall Stones	☐

Tuberculosis: Self Date Contact: Hh. Ext. hh.

Cancer: Self Date Family

Hernia

Hemorrhoids Spinal Disease

Operations—Dates

Injuries—describe—Date

I certify my answers to be true (signature).

Present History

Cough Expectoration Chest Pains Dyspnea Fatigue Hemoptysis

Hoarseness Temp. Night Sweats Menses

No. Pregnancies Miscarriages

Physical Examination

Vision: Normal R 20/ L 20/ Glasses R 20/ L 20/ Color

Hearing R L Temp. Pulse Respiration

Teeth Gums Neck

Nose Throat and tonsils

Heart { Size / Sounds } Rhythm / Murmurs B. P. { S / D }

Abdomen

Hernia

Reflexes Deformity Spine

Fluoroscopic—Chest:

Urine: Sp. Gr. Alb. Casts Pus Sugar Blood

Blood: Hb. Wass.

Rating Remarks

Excellent ☐
Good ☐
Fair ☐
Poor ☐
Rejected ☐

Signed

Medical Director

selves for examination in place of physically unfit individuals who would be otherwise rejected.

Each applicant for work is given a physical examination along the following procedure, as shown on the accompanying form.

It is my intention to point out some of the salient features of this type of preplacement examination and how we fit it into an industrial health program.

1. *Weight*: About one-third of our applicants fall in each of the following classifications: overweight, underweight or within 10% of normal weight. In the overweight group we suggest low caloric diets and systematic exercises. In the underweight group we suggest high caloric diets and vitamins, if there is evidence of vitamin deficiencies.

2. *Past Medical History*: The entire history is of importance. However, we lay special stress on vertigo and epilepsy because of the great danger of accidents during seizures; on asthma and hay fever because of dusty conditions in the textile mills; on skin diseases because of the possibility of occupational dermatitis, especially in the Dye Plant; on tuberculosis because of arrested cases and our desire to prevent contacts from advancing to hopeless stages before diagnosis; on a history of hernia because all hernias are not easily found at one examination; on spinal disease because backstrains and arthritis give us our most difficult problems to handle; and on operations and injuries because of their great value when it comes to job placement.

3. *Physical Examination*:

(a) Vision: We use the Snellen chart and the close vision test for visual efficiency when indicated. All degrees of defective vision are encountered from normal to markedly defective; strabismus, cataracts, etc. All applicants with correctable defects are urged to consult a competent ophthalmologist for diagnosis, glasses and treatment. Grave visual defects which are not correctable are rejected for employment or hired on a job where good vision is not essential to safety or production. In the towel mills and the Dye Plant it is essential that the applicants be able to recognize the various colors if color perception is a requisite for their job.

(b) Hearing, teeth, gums, nose and throat are checked and recommendations are made regarding the correction of defects that exist.

(c) *Heart*: In the speed of present day employment practices, many cases of heart disease, even valvular disease, are probably missed. We hire people with mild heart disease, using as an index the type of lesion, the size of the heart and evidence of decompensation. They are worked under continued observation by the medical department.

(d) *Blood Pressure*: Asymptomatic arterial hypertension is largely a problem of placement rather than exclusion as we feel the subjects possess capabilities which should be utilized. Systolic blood pressure of 200 mm. is the upper limit of employables. In this group we try to get every contributory condition corrected and, frequently, we are rewarded by marked improvement in the worker's condition.

(e) *Abdomen*: Here our greatest concern is hernia of various types, such as inguinal, incisional and umbilical. Most all hernia cases are rejected because of the workmen's compensation liability which they carry. Here we should have some changes made in the law because industry does not wish to assume this liability and yet these people must make a living.

(f) *Hernia*: We grade the inguinal rings from 0 to three plus in weakness. By proper placement of this group we have not had a single hernia to develop among the 4942 applicants that we have examined.

(g) *Fluoroscopic Examination*: By this type of examination we feel that we have been able to pick up all of the significant lesions that occur in the lung. Out of a group of 7,000 examined we have not had a single one to break down with pulmonary tuberculosis.

(h) *Urine*: Routine examination of the urine reveals various findings, the most significant of which is unsuspected diabetes.

(i) *Hemoglobin*: With the increased industrialization of women, anemia has assumed a major role. We recommend diets and refer the applicants to their family physicians for liver extract and iron therapy.

(j) *Wassermann*: All applicants whose blood tests are positive are referred to the medical department for a conference. The disease is explained to them, the importance of regular treatment is stressed, and they

are sent to the clinic or their family physicians for treatment.

After the examination is completed the following rating system is used:

Rating:	Excellent (x)	*Group I.* Hire unconditionally.
	Good (x)	
	Fair (x)	*Group II.* Hire conditionally.
	Poor (x)	
	Rejections (x)	*Group III.* Do not hire.

Group I. All applicants placed in this group are to be hired unconditionally from a medical standpoint. Those that are classified as excellent do not have any *major* or *minor* defects. Those classified as good have one or more minor defects which would not interfere with their ability to perform the duties of their employment; for example, over- or underweight, pyorrhea, caries, etc.

Group II. All applicants falling within this group are to be hired conditionally, depending on the defects listed, and the job that they are to perform. Those rated as *fair* have several minor defects which may be detrimental to their ability to perform the work for which they may be hired. Under this rating would come deformities, fractures, amputations, dilated rings, visual defects, etc. Those rated as *poor* have numerous minor defects, or have defects which are borderline major in character; for example, dilated hernial rings—3 plus, top normal blood pressure, markedly defective vision, etc. It is also recommended that those falling in this latter group be hired only as a last resort.

Group III. Do not hire because of major defects or minor defects so numerous that they have reached a major proportion and seriously handicap the applicant's ability to perform his work.

Distribution and results of preplacement examinations of 4942 applicants are listed in the following chart. Ninety-two per cent are passed while 8% are rejected for various defects as listed in the chart.

MEDICAL DEPARTMENT
DISTRIBUTION AND RESULTS OF SERVICES RENDERED, PERIOD NOVEMBER 23, 1942-OCTOBER 2, 1943

	Totals M	Totals F	Grand Totals	Percentages M	Percentages F	Totals
No. Preemp. Exams.	2750	2192	4942	56	44	100
No. Passed	2466	2081	4547	90	95	92
Rating:						
I	232	225	457	10	11	10
II	1013	970	1983	41	47	44
III	870	653	1523	35	31	34
IV	351	233	584	14	11	12
No. Rejected:	284	111	395	10	5	8
Vision	63	30	93	22	27	24
Lungs	16	7	23	6	6	5
Heart	15	8	23	5	7	5
H. B. P.	40	32	72	14	29	18
Hernia	88	1	89	31	1	24
Deformities	12	1	13	4	1	3
Others	50	32	82	18	29	21
Source: Valley.	1680	1492	3172	61	69	65
Chambers Co.	468	375	843	17	16	16
Other	602	325	927	22	15	19
Type:						
Experienced	1411	1273	2684	51	58	54
Inexperienced	1339	919	2258	49	42	46
No. Reemployment	205	228	433			
X-Rays	$463.50	$234.50	$697.50			
No. Rechecks	172	140	312			

SUMMARY

Preplacement examinations are of great value in an industrial health program because:

1. They are the essential basis for health and accident control.

2. Correctable defects and conditions requiring medical attention brought out in the physical examination, if corrected, will be of equal value to employee and employer.

3. They are indispensable in the proper placement of employees on jobs that they are able to perform without injury to themselves or their coworkers.

4. They serve to protect those already employed from the risk of communicable diseases, such as tuberculosis and various other infections, which may be introduced into their midst by new applicants.

Medical Progress—Experience in many communities has proved that there can be friendly and efficient cooperation between professional organizations and local governmental agencies with resulting benefit to the population. This same cooperation on a national basis will result in mutual understanding and benefit. Such cooperation cannot exist, however, without mutual trust and respect and a desire to reach sound solutions rather than to "put over" preconceived plans or to introduce compulsion. When political manipulation and determination to force cooperation of the medical profession enter into a plan, there can be no constructive discussion. The future of medicine will be affected, therefore, by the attitude of Government toward the medical profession.—*Fitzgibbon, M. Ann. District of Columbia, December* 1944.

MANAGEMENT OF THE COMPLICATIONS OF INTRAOCULAR SURGERY

HERMAN W. FRANK, M. D.
Gadsden, Alabama

Any discussion of the complications of intraocular surgery must be considered from two angles: prevention of such complications and treatment after they occur. Many complications may be avoided by the systematic employment of methods that diminish hazards of intraocular surgery. The scope of this paper will not permit discussion of all complications that may happen in every intraocular operation; and, as the purpose of the address is to present the subject from the most practical standpoint possible, it will be confined largely to the two conditions that every ophthalmic surgeon must attempt to alleviate, namely, cataract and glaucoma.

Two of the complications most dreaded by ophthalmic surgeons are hemorrhage and infection, and these may occur at the time of the operation or later during convalescence. The incidence of the latter has been greatly reduced by meticulous preoperative preparation and by the advent of the newer drugs of the sulfonamide group.

Many of the details in the technique of intraocular surgery which diminish the hazards of complications are not used even by the best ophthalmic surgeons. Some operators are so skillful with their hands and have such complete control of their patients that they do not feel the need of safety devices. Others do not agree that such methods diminish the hazards. To a large extent, the results of eye surgery depend upon the surgeon, and each surgeon must develop and perfect the technique that is safest in his hands.

CATARACTS

The experienced surgeon should be confident of his ability to carry a cataract extraction through to successful, uneventful completion or to a satisfactory conclusion as determined by the complications which are present or which arise. He should, by his demeanor and by his voice, transmit this confidence to the patient. He should be calm and unruffled in his behavior even in the face of difficulties. He should be unhurried in the conduct of the operation. He should find no need for working against time or for believing that the sooner the operation is over the better.

When a patient consults the surgeon as a prospective candidate for cataract [illegible] there are essential facts that must be ascertained. I will first list them and then discuss them briefly: vision, light projection, color perception, lacrimal system, tension, stage of development, smear, culture, blood pressure, urinalysis, focal infection, coagulation and bleeding times.

The vision of each eye is an important bit of evidence to have upon the history, and vision with the best correcting lens should be recorded. There is not much justification for subjecting an elderly patient to cataract operation when the vision is normal, or practically so, in the opposite eye. The patient will not use the eye afterward and will suffer more annoyance than before the operation. The attempt to fit an aphakic eye with an ordinary cataract lens when the other eye sees well is folly. The new type of minifying lenses which are said to overcome this difficulty may someday be practical.

Importance of light projection and color perception is obvious.

The lacrimal excretory apparatus must be clean. A frankly infected sac should be extirpated. In case of dacryostenosis without apparent infection, ligation of the upper and lower canaliculi by temporary sutures should be done.

Intraocular tension should always be taken. Abnormally high tension calls for special care. Failure to reduce by medical treatment calls for preliminary iridectomy.

Stage of development influences the type of operation to be attempted, although I lean strongly to intracapsular extraction unless specifically contraindicated.

The conjunctiva must be clean. I have been inclined to rely on inspection and smears, reserving cultures for questionable cases. I always use zinc sulphate for at least one week prior to surgery.

Knowledge of the state of the blood pressure and urine is essential.

Focal infection should never be overlooked. I am particularly careful that oral sepsis shall be eliminated prior to surgery.

If the bleeding time is increased or clotting time delayed, calcium should be given for several days before hand. In fact, it does no harm and is a wise precaution in all cases.

Freedom from dread and fear of pain on the patient is an invaluable aid in doing good eye surgery. I make it a point to assure my patients from this standpoint prior to the day of the operation. I also instruct the patient in deliberate eye movements and in the necessity of cooperation with the surgeon and the very great dangers of attempted squeezing of the eyes. The value of the time so consumed is repaid manifold in the assistance rather than resistance of the patient on the operating table. Hypnotics have been of inestimable value in lessening the patient's apprehension. Drugs which sometimes cause nausea and vomiting, such as codeine and morphine, should be avoided. Scopolamine should never be used in elderly persons. The drug of choice in my hands is nembutal, sometimes combined with aspirin postoperatively. Akinesia is essential as it eliminates, to a great extent, the hazard of squeezing. I prefer the O'Brien technique. Insertion of a superior rectus suture is a practical measure in patients who have difficulty in controlling the eye movements. Retrobulbar injection of novocaine with adrenalin softens the eyeball and lessens the danger of vitreous prolapse. It is of greatest value in intracapsular extraction, sometimes softening the globe enough to cause embarrassment in delivering the nucleus in the extracapsular operation. I prefer the corneoscleral suture after the manner of Kalt. This tends to prevent vitreous and iris prolapse and is a necessary safety measure, very easily inserted with a little practice.

COMPLICATIONS OCCURRING DURING CATARACT OPERATIONS

Involuntary Iridectomy: This occurs during the section for a number of reasons. First is failure to complete the section quickly after making the counter-puncture, thus allowing escape of aqueous and collapse of the anterior chamber. Pressure with the fixation forceps may be a factor. Whatever the reason, an iridectomy by this method is usually satisfactory. If none is desired, the knife may be withdrawn and the section completed with corneal scissors.

Hemorrhage into the Anterior Chamber: This is commonly seen and is of no moment. The blood should be removed by irrigation before clotting. Otherwise, remove this with clot forceps. It is more common in the combined operation.

Vitreous Prolapse: This is a dreaded term in cataract surgery and one of the most common complications. It is more apt to be encountered in high myopes and in patients with a previous choroiditis because of a pathologically fluid vitreous. It undoubtedly occurs more frequently in intracapsular operations. Excessive pressure by inexpert operators with the fixation forceps is a cause. An eye that has lost vitreous can usually be recognized by its appearance after healing. However, it is surprising what good vision can be obtained after large vitreous loss. Even then the danger of late retinal detachment is present and its loss should be avoided if at all possible.

The lids should be held well forward by the assistant immediately upon completion of the section to prevent the slightest pressure upon the eyeball. If vitreous presents immediately after the incision and before the lens has been delivered, the surgeon can do one of two things. An attempt may be made to grasp the anterior lens capsule with intracapsular forceps and an attempt made to deliver the lens by gentle traction above. If this fails, the only method available is to place a wire loop back of the lens, hugging its posterior surface in the meanwhile. The suture is then promptly tied. No attempt should be made to remove remaining cortex after vitreous loss. In case the vitreous prolapse takes place after the lens has been removed, the suture should be promptly tied, vitreous cut away with scissors and pillars replaced. Excessive zeal in attempting intracapsular extraction, rather than do a capsulotomy when difficulties are encountered, is responsible for many cases of vitreous prolapse. Cases following prolapse are not inspected for four or five days unless pain appears. I recall a case that I did not inspect for eight days following a large loss of fluid vitreous in an only eye. The resulting vision was excellent with, strangely enough, not even the slightest incarceration of the iris pillars.

Dislocation of the Lens into the Vitreous: This complication rarely happens in competent surgical hands. If too much pressure is made with the capsule forceps, the zonule may rupture with the resulting dislocation of the nucleus upward behind the iris and ciliary body. Gentle stroking through the cornea above will move it back into position and it can then be delivered in the normal manner. Dislocation deep into the vitreous is a serious complication, and this is more likely to occur in hypermature cataracts with a small nucleus. It becomes necessary here to effect removal with a wire loop, a difficult procedure because the nucleus cannot be seen easily by the operator. A fluorescing lamp, which produces fluorescence of the lens, is very valuable in this complication.

Expulsive Hemorrhage: This is the most dreaded of all accidents that occur to the ophthalmic surgeon. It is estimated that it occurs in one to five percent of cataract extractions. Vascular and intraocular hypertension are important predisposing causes and careful preoperative preparation will lessen the probability. The hemorrhage comes from the friable choroidal vessels following the sudden release of intraocular pressure. Immediately following the incision, the lens may be expelled spontaneously, followed by the contents of the eyeball and a gush of blood. Enucleation is usually necessary following this disaster. Occasionally it occurs a few hours after operation. The patient then complains of sudden severe pain, often of nausea, and the dressing is found soaked with blood. The eye is usually lost. Vail recommends immediate posterior sclerotomy when this accident occurs.

COMPLICATIONS FOLLOWING THE OPERATION

Wound Infection: This is practically certain to occur if surgery is done in the face of a contaminated conjunctiva. It is obvious that the conjunctiva cannot be sterilized but a relative sterility can be achieved, and careful preparation to exclude contamination is usually successful. Proper sterilization of instruments and sutures needs no elaboration. Patients should be cautioned against vigorous blowing of the nose after an operation because of the possibility of forcing infection up through a patulous lacrimal duct.

When a patient complains of an undue amount of pain in the first twenty-four hours, beware of infection. When the dressing is removed it will be soaked with tears or secretion, the lids will be swollen, and there will be marked chemosis and infiltration of the wound edges. Hypopyon follows early.

Drastic treatment is urged. Cauterization, chemical or actual of the wound, typhoid vaccine in large doses intravenously, hot fomentations, and sulfonamides locally and internally offer the greatest hope. In spite of all treatment the prognosis is poor.

Late Infection: This is more in the nature of a severe continuing uveitis. A focus of infection is frequently a contributory factor. The most common sites are teeth, tonsils, and sinuses—and in this order of frequency. Heat, atropine, calcium gluconate, foreign protein, salicylates and sulfonamides are of value. The infected focus will usually have to be eradicated. Aphako-anaphylaxis is a factor to be considered in extracapsular extractions. Excessive traumatism at time of operation plays a large part.

Late Hemorrhage: This usually occurs upon the fourth or fifth postoperative day. The patient has been doing well and suddenly complains of a sharp pain in the eye. The surgeon then knows before he opens the eye what he will find. There may be a small or complete hyphemia. This delays convalescence but practically always disappears. If present too long or recurring too often, it may cause permanent staining of the cornea with resultant decrease in visual acuity.

Separation of the Wound: This usually occurs during the first few postoperative days as a result of vomiting, coughing, straining or some accidental injury. Prolapse of the iris usually happens at the same time. If the situation warrants immediate surgery, the patient should be prepared as carefully as for the original operation. The prolapsed iris should be excised, sutures carried from the limbus to the episclera, and the wound securely approximated, followed by covering wtih a conjunctival flap. If the wound edges fail to unite after several weeks, they should be freshened by application of trichloracetic acid.

Eversion of the Cornea: This cannot happen when a corneo-scleral suture is used, so I will discuss it with mention only.

Postoperative Glaucoma: Many patients who develop glaucoma following cataract extraction have had it before operation, though it is undiscovered. Downgrowth of corneal epithelium into the wound forming an epithelial lining of the anterior chamber accounts for a few cases. Blocking of the angle of the anterior chamber by cortical debris or uveal exudate may produce secondary glaucoma. An acute rise in tension frequently follows too free incision of soft cataracts. This is less common if through and through discission is done. If it should happen, it is best to remove the cortical material by linear extraction.

A common teaching has been that glaucoma often is produced by incarceration of a coloboma pillar in the wound. I do not agree with this theory and think its occurrence from this cause is rare.

GLAUCOMA

I confine myself to three operations for this condition; namely (1) broad iridectomy for surgical relief of an acute attack; (2) cyclodialysis; and (3) iris inclusion. For compensated glaucoma (glaucoma simplex) and as an interval operation in acute glaucoma, I have limited myself to iridencleisis unless marked field contraction is found and the case is just beyond control by miotics when I lean to cyclodialysis.

Iridencleisis is a relatively simple operation and yields excellent results. A retrobulbar injection of novocaine and adrenalin is given a few minutes ahead, both for anesthesia and to soften the globe. In case the intraocular tension is unduly high, 50 cc. of 50% sucrose solution are given intravenously an hour before operation. Time and space do not allow me to detail the steps in this operation. However, two points are valuable. First, a subconjunctival injection above makes it much easier to dissect down a thick conjunctival flap to the limbus. Second, it is much safer to enter the anterior chamber by means of a scratch incision just behind the limbus. The scratch incision eliminates the danger of scratching the anterior lens capsule with the keratome point and the incision reaches the base of the iris instead of well below it, as occurs when a keratome incision is made.

The only complications seen in this procedure are (1) retinal hemorrhages, which can occur in any intraocular operation with sudden lowering of tension; (2) hyphemia which disappears in a few days; (3) hemorrhage into the vitreous if the incision is too far back, causing vitreous presentation; and (4) iritis, which responds to atropine and heat. It is safe to use atropine after iris inclusion operations. Following this operation, the anterior chambers refill within twenty-four hours, massage is started early and continued for some weeks, and the results are excellent. I feel that the criticism of sympathetic ophthalmia and late infection as a contraindication to this type operation is unjustified since the occurrence of either is so extremely rare. I consider it the safest and best filtering operation yet described.

This by no means covers all the complications that beset the ophthalmic surgeon. Attention to these details will, however, spare much anxiety. Any surgeon will have some complications. He can keep these at a minimum by careful, gentle, deft surgery. He must know how to cope with them wisely if they occur. There is no substitute for mature, sound surgical judgment, an acquired trait that sets some surgeons apart from their colleagues.

School Pediatric Problems—Certain cases of grand mal are associated with mental deterioration and do not properly belong in any public school. On the other hand, many epileptic children, particularly those with petit mal, are bright children and can do the same work as their more favored confreres of the same age. Out of a series of 1,600 cases Lennox notes that 67 per cent are of normal mentality and another 23 per cent only slightly subnormal—ratios probably not too different from those of the non-epileptic population.

Many epileptic children behave in a peculiar manner; they are ashamed and frustrated and insecure. Some of this bizarre behavior may be the direct result of organic disease but I believe much is attributable to the attitude toward them of those with whom they are in contact. If instead of ostracism, we accept epileptics into the bosom of our friendliness and sympathy to even a greater extent than we do our favored pupils, we shall find, in the vast majority, that many disturbing vagaries of conduct will disappear and seizures will diminish in number. Disregard of the emotional suffering of these children and treatment of overt conduct with severe disciplinary measures tend to increase difficulties. On the other hand, a sympathetic understanding of the nervous and emotional instability of the child's reactions . . . tends to minimize both emotional outbreaks and seizures.—*Powers, J. Connecticut M. Soc., Jan.* '45.

Care of Aged Surgical Patients—Many old people will refuse operation on the plea of age, uselessness to others and so on. If these people can be assured that help is not only possible, but probable, and that their recovery is desired by everybody, a happier frame of mind is induced. They must be led, not driven. A hopeful, trusting patient who wants to get well has been more than half prepared. A properly-trained nurse, accustomed to handling old people, is invaluable.

Remember that older people have developed a "habit of living," a resistance to infection and an ability to stand pain or an indifference to it that stands them in good stead. On the other hand they often follow food faddists and develop habits of diet that are bad. A common result is a low protein intake, with its anemia and debility-producing results. Low vitamin intake is common with resultant poor healing and poorer prognosis. It is often amazing what some of the commercial concentrates of B and C will do to induce a sense of well-being. You all know the importance of vitamin C in healing of tissue.

The less departure from an older person's routine the better. The older one gets the more he loves routine and established things. The feeling of insecurity in children is only matched by that in the aged, and requires a corresponding assurance of belonging, of being wanted, and of being useful.

Most deaths in old people are primarily due to circulatory failure. A test of the circulation and cardiac reserve should be made. This is difficult but is of the greatest importance. The history of the patient's parents and relatives and of his own physical activities, and his response to them as well, are of great value. Pulse, blood pressure, a chest plate and an electrocardiogram will give much additional valuable information.

As to the kidneys, the simple tests for sugar, albumen and the sediments, as well as the ability to concentrate and dilute the urine, will usually suffice for that department. The lungs are hard to evaluate. Many of the secondary effects of emphysema are often present due to loss of elasticity of the lungs even though a true emphysema is not present. Infections, even pneumonia, may be present with but few objective findings.

Oral hygiene as a prophylactic of suppurative parotitis is worth attending to. The nutritional deficiencies, anemia, low serum protein and so on, indicated previously, must be corrected.

Thewlis in his book on "Care of the Aged" recommends digitalis preoperatively in almost all serious operations on the aged. Many others do not agree and I am inclined to concur. But I do believe that Borg is right in his use of quinidine and I think I have saved some lives thereby, as a frequent cause of cardiac failure is auricular fibrillation.

So you see, although definite principles must be borne in mind, extreme individualization in preparing these aging people for surgery is important.

After surgery on aged or aging people the utmost care is required. Here, too, an experienced, tactful nurse is worth everything and may mean the difference between life and death. For years I have been advocating early activity postoperatively. Nowhere is it more important than here. Old people fail rapidly in bed. These people must if possible get out of bed the day of the operation. That this is not dangerous to the wound I can assure you from personal experience and from that of many others. This also has a most wholesome psychological effect and I believe definitely reduces the chances of embolism.—*Sohlberg, Minnesota Med., Jan.* '45.

Carcinoma of the Larynx—The etiologic factor in cancer of the larynx, as in all cancers, is not definitely known. Irritants predispose a delicate mucosa to malignant changes. Smoking has been considered to act as an irritant to the laryngeal mucosa, yet we have seen several patients with carcinoma of the larynx who have never used tobacco in any form.

In its incipiency intrinsic cancer of the larynx is always unilateral, of slow growth and late extension because of the peculiar and restricted lymphatic arrangement within the larynx. The preferential site is that region which is most active, the vocal cord; Jackson estimates 85 per cent of carcinomas are found on this organ. Because of the limited extension of the lymphatics within the region of the cords, the prognosis is good in all early intrinsic lesions. Intrinsic carcinoma of the larynx offers a larger percentage of cures than carcinomas occurring in any other organ of the body, if an early diagnosis has been made.

Similarly, no other organ in the body gives as early a warning of the presence of malignancy as does intrinsic carcinoma of the larynx. Practically with its inception, intrinsic carcinoma of the vocal cord produces an alteration of voice recognized as hoarseness. This manifestation will persist and gradually become worse as the lesion slowly increases in size. There is absolutely no pain or discomfort in the early stages of the disease. Laryngeal examination is imperative in every case of persistent hoarseness for this is the only manner by which an early diagnosis can be made. The importance of an early examination cannot be stressed too vigorously as the very life of the patient depends entirely upon early recognition of the disease. The general practitioner is in a position to play an important role in the recognition and control of intrinsic cancer of the larynx. He must, however, be on the alert for cases of persistent hoarseness, referring these to a competent specialist who will conduct a thorough laryngeal investigation. The cooperation of the general practitioner is necessary in disseminating to the patient the fact that persistent hoarseness is the danger signal in carcinoma of the larynx. Until the layman becomes fully cognizant of the significance of persistent hoarseness, we cannot expect to see more cases of malignancy of the larynx in the early stages.

It is unfortunate that so many cases of carcinoma of the larynx seen for the first time by the laryngologist are so far advanced that little or nothing can be offered them.—*LeJeune, New Orleans M. & S. J., Jan.* '45.

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THE EFFECT OF VITAMIN SUPPLEMENTS ON NORMAL PERSONS

"At the present time the use of vitamins is widespread throughout the country, not only in the treatment of disease, but also by apparently normal persons. While no one would question the employment of vitamin therapy in frank deficiency diseases or even in suspected deficiency states, still one wonders if the indiscriminate use of vitamins, sold over the counter to people who have no obvious disease, is justified. It has been argued that such vague symptoms as weakness, nervousness, fatigability and insomnia can result from a vitamin deficiency and, therefore, when such symptoms appear, vitamin therapy should be instituted. Recent surveys, with the recommended daily allowances of the National Research Council as a guide, have indicated that the average American diet often is not adequate to maintain optimal nutrition. This has been used as an additional argument for the administration of vitamins to people without obvious disease on the assumption that they may actually have a subclinical deficiency of which they are not aware." Thus do Ruffin and Cayer state the case in their brief but excellent consideration of this subject.[1] The Durham investigators made an effort to determine the effect, if any, of various vitamin supplements on apparently normal persons. Volunteer medical students and technicians were used as subjects, from 182 of whom reliable data were obtained. The subjects continued their usual activities and ate essentially the same diet. "Each subject was given a work sheet to be kept daily and was instructed to record his impressions as to the effect of the medication he was taking on the appetite, energy and 'pep,' general health, 'gas' or indigestion, nausea, vomiting, the number of stools per day, abdominal pain and weight. The duration was one month, during which each subject took his supplements daily. No subject knew what he was receiving or to what group he belonged. At the beginning of the experiment they were told that one group would receive placebos and the remainder various vitamins. They were instructed not to compare notes or discuss their symptoms with fellow subjects."

As to their findings, the authors report that, in regard to appetite, there was "no essential difference among the various groups." And "it will be observed that the number recording improvements in energy and 'pep' and in general health, as well as gain in weight, was essentially the same in the group taking placebos as in the other four groups who were taking various vitamin supplements." We read that "no significant differences were noted in the symptoms 'gas and indigestion' by the various groups. However, in the group taking yeast there was a definite increase in the number of subjects who recorded the development of abdominal pain."

And "except for one subject taking placebos, nausea and vomiting accurred only in those taking liver extract and yeast, particularly the liver extract. Likewise, diarrhea developed most frequently in those taking liver and yeast."

The Duke observers conclude by stating that "the administration of vitamin supplements to a group of apparently normal persons, consuming the usual American diet, had no demonstrable beneficial effect."

Ruffin and Cayer have done well to in-

1. Ruffin, Julian., and Cayer, David: The Effect of Vitamin Supplements on Normal Persons. J. A. M. A. 126: 823 (November 25) 1944.

quire into the excessive and indiscriminate use of vitamins and their study cannot fail to impress the judicious. Vitamin therapy within reason will be decried by no one, but its overexploitation is to be most heartily condemned. And it is to be hoped that the profession will take the lead in discouraging the current overemphasis of a new and valuable method of treatment in many, but by no means all, patients.

STATE DEPARTMENT OF HEALTH

BUREAU OF ADMINISTRATION

B. F. Austin, M. D.
State Health Officer

AGE AND PHYSICAL EXERCISE

The newspapers told some time ago about the head of a famous hospital who at the age of 90 was still running a quarter of a mile every day. Another newspaper story mentioned a woman in Jersey City, N. J. who celebrated her ninetieth birthday by doing a folk dance "with jitterbug variations." From New York City comes the news of a man 103 years old who, according to a newspaper writer, "climbs four flights of stairs daily," and from far-away Australia we learn about a man a year past the century mark who was dissatisfied because a temporary illness prevented him from enjoying his daily swim.

The present writer hastens to add that he is simply telling about these old people and the strenuous exercise they took—not endorsing it. On the contrary, he is strongly inclined to question the wisdom of placing such great physical strain upon the body after one has reached or passed middle age. While those who have been mentioned and no doubt a considerable number of others apparently have not suffered any serious ill-effects from it, or at least had not done so when their names appeared in the papers, they should be regarded as the exceptions that prove the rule. And the rule, a wise rule based upon long medical experience, is that strenuous physical exercise, suitable enough for the young, should be gradually lightened as one grows older and revised substantially by the time one has reached one's forty-fifth birthday. For, while it is true, as the great Disraeli once observed, that time is "the great physician," it is also true that time brings changes in the human body which make it less resistant to numerous diseases and lays the groundwork for a number of others. Although every person should face the problem of middle age and old age with his or her peculiar health needs in mind, it should be evident to most of us that, generally speaking, immoderation is the exclusive privilege of youth. Those who are no longer young should learn to take it easy.

This does not mean of course that they should act and feel like invalids or semi-invalids. There are many wholesome and enjoyable activities still open to them, activities in which they can indulge with great pleasure and relatively complete safety. But at the same time they should "act their age." Otherwise they are exposing themselves to serious dangers of which they may not become aware until they have done themselves grave damage. And a 90-year-old man running up several flights of stairs is not "acting his age." Neither is a centenarian who insists upon his daily swim or the person of 70 or even 50 who plays singles tennis. The fact that you occasionally see newspaper stories about older persons who do these things and appear to be "getting by with it" does not alter the basic truth that strenuous exercise, whether at work or at play, is not for the middle-aged or aged.

The newspapers used to tell us that Italy's former duce, Benito Mussolini, forbade the celebration of his birthdays while he was in his heyday because he could not be reconciled to the fact that he was getting older, and wanted, as far as possible, to keep that fact from the awareness of the people he ruled. Instead of reminding them every twelve months that he was a year older, we were told, he availed himself of every opportunity to have them consider him young, vigorous and abounding in robust health.

The former duce's reluctance to admit the passing of the years, even to himself, has a counterpart in many Americans and Ala-

bamians. Men and women alike go to much trouble and expense to put up an appearance of youthfulness, adding millions of dollars a year to the intake of the beauty business. Finding one's first grey hair is often something in the nature of a personal tragedy, and many men will do almost anything to head off an incipient case of baldness.

Dr. Walter B. Pitkin sought to dissipate the fear of middle age when he wrote his famous book "Life Begins at Forty." Robert Browning sought to quiet the fears of an older age group when he wrote his much-quoted "grow old along with me, the best is yet to be." Cicero appealed to the same age group of an earlier century when he wrote his famous essay on Old Age (*De Senectute*). In it, you may recall, he compares old age to a man who has won a race and youth to a person who has that race—or a good part of it—still ahead of him. Therefore, he reasoned, the old person has greater occasion for contentment and satisfaction than the young one.

But whether one welcomes the passing birthdays or tries to forget them and prevent others from remembering them, the fact remains that they do come and go, sometimes with bewildering rapidity. And it is the part of health wisdom, as well as of wisdom generally, to recognize this fact and adjust oneself to it. It is particularly important to extend this adjustment to the physical exercise one takes.

"It is a truism that exercise is an aid to health," Dr. W. W. Bauer, director of health education of the American Medical Association, said in a radio talk. "In moderation it is a physical and mental tonic; it stimulates the body processes, increases the muscular strength and adds to one's energy for work. It is as necessary as food and play. In fact it should be taken partly as recreation and combined with play. In this sense it becomes sport, a term that implies pleasure and satisfaction in muscular activity. There is a limit within which one should remain if one would obtain the benefits of exercise."

That "limit within which one should remain if one would obtain the benefits of exercise" depends of course upon many factors, of which a person's age is one of the most important. Generally speaking, the older one becomes the more necessary it is to pay attention to that limit. Fortunately, however, it seldom becomes a complete barrier to physical exercise even to the aged, unless of course there are special health factors to be considered.

It is unfortunate that a person's immediate reaction to exercise is not a dependable test of its safety at any age; for a certain amount of stiffness or soreness is almost certain to be experienced whenever one either begins a form of exercise to which he is not accustomed or materially increases that which he has been taking. A person who has not ridden horseback for many years almost inevitably experiences much discomfort immediately after resuming this sport, regardless of his age or the state of his health. The same is true of the person who does any unaccustomed lifting, runs to catch a bus after years of walking or riding, or returns in middle age to the enjoyment of the swimming and diving which he found so pleasant in his youth. Lazy, long-unused muscles forced to go back to hard work quickly protest in a most disagreeable and unmistakable way. So there is no occasion to regard such pain or soreness as an indication that the newly begun or newly resumed activity is harmful, unless it persists. If it does, then it is well to choose some less strenuous form of activity. At least one should consult a physician regarding the wisdom of continuing.

Particular attention should be paid to the heart of the person who has reached or passed middle age. That is only one of a large number of organs performing their part in the work of keeping the human machine operating efficiently, it is true, but its proper functioning is more vital to health and even to life itself than that of any other part of the body—for the very minute this organ quits working, death comes. And, unfortunately, the heart appears to be particularly susceptible to the ravages of time and the strain of modern living. As you probably know, heart disease is responsible for considerably more deaths in Alabama every year than any other single cause.

Unfortunately, it is all but impossible for the average layman to know anything about the true condition of his heart. Many people who become worried about their hearts because of apparent symptoms are perfectly well, as far as that organ is concerned, while many others who consider their hearts in

perfect condition are destined to early death from heart disease, including a considerable number whose deaths will be due directly to over-exercise. It is the part of wisdom, therefore, to obtain the advice of one who is in a position to know—the physician. It is better to obtain a complete physical check-up before engaging in any unaccustomed physical activity, but, if that is impracticable, a person should at least have his heart examined. If the examination brings the cheering news that it is in first-class condition after 40 or 50 years of continuous work, then one may safely indulge in any form of exercise which does not involve excessive fatigue and otherwise meets with the physician's approval. If, on the other hand, the report is less cheering and some involvement of the heart has been discovered, the amount and type of exercise to be taken should be determined by this fact. While it is usually something of a shock to be told that the heart is not as sound as it used to be, this news should not produce panic or a resignation to a life of invalidism or semi-invalidism. Instead it should bring a feeling of thankfulness that the heart's faulty condition was discovered before serious damage could be done and when only a minimum of readjustment in one's habits is called for. Examinations should be obtained at least once a year.

Dr. Morris Fishbein, editor of Hygeia and The Journal of the American Medical Association, took occasion in an editorial in the former publication to discuss exercise as it affects the older man or woman. His view was, and presumably still is, in agreement with the central theme of this article—that those who have reached middle age should go easy on the exercise. Moreover, he reminds us that certain animals which are known for their inactivity have a way of living longer, often much longer, than those known for their industry and activity.

"The opponents of exercise insist that the animals that exercise least live the longest," he wrote. "They mention, for instance, the deep sea turtle which may live several thousands of years, and elephants which live three hundred years, whereas physically active animals like the dog live from ten to fifteen years, the rabbit, if he is lucky, seven to eight years, and the mouse only a few months. People who work hardest live the shortest time. The more rapidly we expend our energy the shorter we are likely to live. The best advice has always been to keep exercise below the point of fatigue and exhaustion. This is the advice that is especially important for people past 40."

A short time before this editorial was published another physician, Dr. Peter J. Steincrohn, recommended "Rest begins at 40" as a suitable slogan for the middle-aged.

"Exercise all you want to up to 30," he advised. "Slow down at 35, don't lift a finger unnecessarily after 40." His expressed belief is that, after 40, exercise should "be limited to gardening, or walking, or both."

Perhaps Dr. Steincrohn's views are somewhat extreme. Few people would be willing to reduce their exercise to the vanishing point after reaching middle age, and it is questionable whether they would feel well if they should do so. But such expressions show a decided tendency to swing away from the emphasis upon exercise at all ages. And they remind us of Chauncey Depew's oft-quoted remark on that subject. When someone asked this long-lived statesman and raconteur what exercise he took, he replied that he took none at all except attending the funerals of friends of his who took lots of exercise.

Let us not be swayed too much on the one hand by Dr. Steincrohn and Chauncey Depew or on the other, by those who sing the praises of exercise for young and old alike. Instead let us take the safe and wise middle-ground of moderation. And, if you have reached middle age, ask your physician for his advice about any unusual physical activity in which you are tempted to participate.

REPORT OF THE RABIES INSPECTOR
MONTGOMERY COUNTY
1944

Clinics held in the city of Montgomery	23
Clinics held in the county	72
	95
Dogs inoculated in the city	3,000
Dogs inoculated in county	3,084
	6,084
Uninoculated dogs picked up	713
Number redeemed from pound	96
Stray dogs destroyed	538
Investigations made	27
Cases of rabies	0

Assistants employed	5
Dog catchers	3
Miles traveled	20,500
Arrests and convictions	0
Penalties collected	450
Fees collected	5,634

G. J. Phelps, D. V. M.
Jan. 1, 1945 Rabies Inspector.

BUREAU OF LABORATORIES

Samuel R. Damon, Ph. D., Director

SPECIMENS EXAMINED

OCTOBER 1944

Examination for diphtheria bacilli and Vincent's	1,757
Agglutination tests (typhoid, Brill's, undulant fever)	742
Typhoid cultures (blood, feces and urine)	738
Examinations for malaria	933
Examinations for intestinal parasites	1,613
Serologic tests for syphilis (blood and spinal fluid)	36,677
Darkfield examinations	37
Examinations for gonococci	3,503
Examinations for tubercle bacilli	1,398
Examinations for Negri bodies (microscopic)	61
Water examinations (bacteriologic)	1,211
Milk examinations	2,216
Miscellaneous	998
Total	51,884

* * *

NOVEMBER 1944

Examination for diphtheria bacilli and Vincent's	1,231
Agglutination tests (typhoid, Brill's, undulant fever)	547
Typhoid cultures (blood, feces and urine)	512
Examinations for malaria	568
Examinations for intestinal parasites	1,326
Serologic tests for syphilis (blood and spinal fluid)	30,882
Darkfield examinations	43
Examinations for gonococci	3,415
Examinations for tubercle bacilli	1,385
Examinations for Negri bodies (microscopic)	56
Water examinations (bacteriologic)	1,196
Milk examinations	1,780
Miscellaneous	859
Total	43,800

* * *

DECEMBER 1944

Examination for diphtheria bacilli and Vincent's	673
Agglutination tests (typhoid, Brill's, undulant fever)	449
Typhoid cultures (blood, feces and urine)	399
Examinations for malaria	342
Examinations for intestinal parasites	876
Serologic tests for syphilis (blood and spinal fluid)	31,071
Darkfield examinations	43
Examinations for gonococci	2,427
Examinations for tubercle bacilli	1,182
Examinations for Negri bodies (microscopic)	49
Water examinations (bacteriologic)	1,015
Milk examinations	1,779
Miscellaneous	548
Total	40,853

* * *

FOR THE YEAR 1944

Examination for diphtheria bacilli and Vincent's	8,559
Agglutination tests (typhoid, Brill's, undulant fever)	8,370
Typhoid cultures (blood, feces and urine)	8,133
Examinations for malaria	10,968
Examinations for intestinal parasites	21,370
Serologic tests for syphilis (blood and spinal fluid)	436,946
Darkfield examinations	386
Examinations for gonococci	39,048
Examinations for tubercle bacilli	18,449
Examinations for Negri bodies (microscopic)	737
Water examinations (bacteriologic)	14,656
Milk examinations	25,980
Miscellaneous	8,439
Total	602,041

BUREAU OF PREVENTABLE DISEASES

D. G. Gill, M. D., Director

PREVALENCE OF COMMUNICABLE DISEASES IN ALABAMA

1944

	Oct.	Nov.	E. E.* Nov.
Typhoid	7	4	17
Typhus	92	64	35
Malaria	322	163	427
Smallpox	1	0	0
Measles	9	4	28
Scarlet fever	115	128	119
Whooping cough	51	69	67
Diphtheria	163	125	144
Influenza	89	90	215
Mumps	21	41	44
Poliomyelitis	7	3	5
Encephalitis	0	0	1
Chickenpox	9	60	93
Tetanus	2	6	5
Tuberculosis	223	159	208
Pellagra	0	1	15
Meningitis	12	13	8
Pneumonia	130	188	242
Trachoma	0	0	0
Tularemia	0	0	0
Undulant fever	7	5	3
Dengue	0	0	0
Amebic dysentery	1	21	0
Cancer	190	173	0
Rabies—Human cases	0	0	0
Positive animal heads	19	21	

As reported by physicians and including deaths not reported as cases.

*E. E.—The estimated expectancy represents the median incidence of the past nine years.

BUREAU OF SANITATION

T. H. Milford, M. S. in S. E., Director

ADULTERATION OF MILK WITH WATER

Contributed by

C. E. Fortenberry, B. S.
Senior Sanitarian

Adulteration of milk by the addition of water was common 50 or more years ago. In fact, provisions against adulteration were the chief items of the first milk ordinances passed in this country. It was not until the early part of this century that sanitation became the chief concern of milk inspectors. From about 1920, when milk inspection was getting underway in Alabama, until 1941, adulteration was so infrequent that inspectors rarely thought of it, and even most of the laboratories had quit running tests for it.

In 1941, several crowded areas in the state became short of milk. Purchases by the army and increased demands by the public brought on a shortage of milk almost throughout the state in the winter of 1941-1942. At first, existing graded dairymen increased their herds and sufficient additional graded dairies were installed to supply the demand in most places. However, since the fall of 1942, a state-wide shortage of milk has occurred each winter, with barely enough milk to supply demands even in the peak spring and summer production seasons. About the time the shortage developed, OPA froze the price of milk. However, labor and feed costs continued to rise for sometime.

Apparently the combination of a milk shortage and increased cost of production led to increased frequency of adulteration of milk. However, the milk producers were not the only offenders, for there is good evidence that water has been added at some pasteurization plants. Early in 1942, low specific gravity and butterfat readings, indicative of added water, were observed so frequently as to become of concern. In June 1942, the Director of Laboratories instructed the branch laboratories to run specific gravities on all milk samples received. If the specific gravity was below 1.030, the laboratories were instructed to run a butterfat test to determine whether an abnormally high fat content usually due to improper mixing at the time of sampling might account for the low specific gravity reading. If the butterfat test did not show a fat content sufficiently high to account for the lowered specific gravity reading, a portion of the sample was then to be sent to the Central Laboratory (except by the Birmingham Branch Laboratory which had equipment) for tests for presence of added water. At the same time a letter was sent to all County Health Officers by the Division of Inspection calling attention to the frequency of adulteration, announcing the plans for routine test of all samples, and pointing out the provisions in the milk regulations against adulteration.

From March 1 through December 31, 1943, 128 samples showing added water were tested at the State Laboratory. Ninety samples showed added water for the entire year of 1944. The amount of water added varied from only a few per cent to as high as 51 per cent, with an average of 17 per cent.

The presence of added water in milk can be accounted for in three ways. It may rarely get in accidentally from splash or from leaking coolers or pasteurization vats. However, it is hard to conceive of more than one or two per cent being introduced in this way. By far the majority of the adulterated samples showed more than 10 per cent of added water. A careless operator might leave rinse water in a can or vat and add milk to it. In some instances this has apparently been done intentionally which brings up the third explanation for added water in milk, that of deliberate fraud. Some dairymen have claimed that the presence of added water must have been due to an employee adding water to replace milk stolen or spilled.

Whether added water is due to accident, carelessness or intentional addition, its presence is a violation of the milk regulations. The 1939 State Board of Health Milk Regulations require that any dairy be degraded at once when added water is found a second time in any six months period, regardless of other penalties which may have been imposed, such as filing of complaints for adulteration in city court.

A conservative estimate indicates that 15,000 gallons of water have been added to milk in Alabama and sold for 15 to 18 cents per quart during the past 20 months. The increased cost to consumers from the addition of 15 gallons of water to 85 gallons of milk is at least $9.00 per day. This alone is suffi-

cient cause for vigorous action to prevent or penalize such fraud. However, when one recalls that infants and many invalids have their diets and formulas figured on the basis of whole milk, adulteration actually robs them of needed nutrients, and in that light should be considered a criminal act.

Adulteration of milk is still far too prevalent in this state. Continued checks will no doubt be necessary at least so long as the shortage continues, and probably even after that. Health Officers should use every legal means at their command to break up this reprehensible practice. Dairymen who have been caught frequently insist that the water got in accidentally. However, it is strange that these accidents rarely occur again when a dairymen has been degraded or has paid a fine for adulteration.

Navy Medicine—In spite of all the efforts that have been made by the Medical Department of the Navy to weed out obvious misfits at the training centers, many officers and men have been returned from war zones because of combat fatigue. Human nature, being what it is, can stand only so much. How much an individual can stand is a variable factor and cannot be predetermined with any great degree of accuracy. It is inevitable that many men, among them those with great imagination, and therefore great capabilities, will be unable to stand the stress and strain of long-continued conflict. After a time these men begin unconsciously to seek refuge in somatic complaints, or just plain weariness, and are no longer useful in combat. They are not cowards, nor are they ill. They have just been subjected to more than their mental and physical constitution can stand. A period of rest usually restores them to normalcy. If it does not, they are sent home. It is important that we who have not undergone their experiences should recognize them as normal men and treat them as such. Unless we do, we shall create within them a feeling of inferiority and make of them chronic invalids. We do not know that we could have stood up as well as they did under the hardships they faced.

Medical, surgical and mental ills are filling our continental hospitals with patients. The large majority of these will recover and return to duty. Those who do not will face life under conditions new and strange to them. It is our duty to see that those disabled in any way by their war service shall be returned to civilian life at least as well able to carry on as they were when they left it, and, if possible, fitted for better living. For this reason the Navy has established a rehabilitation program of which we expect much good. Its purposes are (1) to return men to duty physically and mentally fit, and (2) to see that the men who must be discharged are able to earn a decent living and do not have to depend upon charity, either governmental or local, for a living.—*Sheldon, South. M. J., Jan.* '45.

BUREAU OF VITAL STATISTICS

Ethel R. Hawley, Acting Director

PROVISIONAL MORTALITY STATISTICS

REPORTED BIRTHS, STILLBIRTHS, DEATHS FROM CERTAIN IMPORTANT CAUSES AND RATES*— OCTOBER 1944, 1943, 1942

Births, Stillbirths, and Causes of Death	Number of Deaths Registered—Oct. 1944			Rate (Annual Basis)		
	White	Colored	Total	1944	1943	1942
Births, exclusive of stillbirths	**	**	6044	24.6	26.2	28.0
Stillbirths	**	**	197	31.6	32.0	28.5
Deaths, exclusive of stillbirths	1220	834	2054	8.4	8.7	8.3
Infants deaths:						
Under one year	154	105	259	42.9	38.9	39.4
Under one month	101	53	154	25.5	23.2	25.5
Typhoid and paratyphoid, 1, 2	1	1	2	0.8	0.4	.....
Epidemic cerebrospinal meningitis 6	3	1	4	1.6	0.4	.....
Scarlet fever 8	.....	1	1	0.4	.....	.....
Whooping cough 9	1	3	4	1.6	3.2	3.2
Diphtheria 10	13	.....	13	5.3	4.1	4.9
Tuberculosis, all forms 13-22	51	57	108	44.0	40.3	45.1
Malaria 28	4	3	7	2.8	3.7	4.1
Syphilis 30	11	19	30	12.2	10.6	17.9
Influenza 33	5	4	9	3.7	11.0	6.5
Measles 35	.....	.....	.....	.....	0.4	.....
Poliomyelitis 36	1	.....	1	0.4	.....	0.4
Encephalitis 37	1	.....	1	0.4	.....	0.4
Typhus fever 39	4	.....	4	1.6	1.2	0.4
Cancer, all forms 45-55	117	61	178	72.6	65.9	71.2
Diabetes mellitus 61	18	9	27	11.0	11.8	12.6
Pellagra	6	4	10	4.1	5.7	7.7
Alcoholism 77	2	1	3	1.2	1.2	1.6
Intracranial lesions 83	120	74	194	79.1	87.9	83.4
Diseases of the heart 90-95	248	144	392	159.9	178.2	146.8
Diseases of the arteries 96.99	20	8	28	11.4	10.2	11.4
Bronchitis 106	3	.....	3	1.2	0.8	0.8
Pneumonia, all forms, 107-109	54	42	96	39.2	45.6	32.1
Diarrhea and enteritis (under two) 119	14	7	21	8.6	4.9	11.4
Diarrhea and enteritis (two and over) 120	3	1	4	1.6	2.0	3.2
Appendicitis 121	10	7	17	6.9	5.7	4.5
Hernia, intestinal obstruction 122	9	5	14	5.7	8.1	6.5
Cirrhosis of the liver 124	6	4	10	4.1	6.5	4.1
Nephritis, all form 130-132	77	70	147	60.0	57.0	60.2
Diseases of the puerperal state 140-150	7	15	22	35.2	37.5	26.8
Puerperal septicemia 140, 142a, 147	2	5	7	11.2	7.5	12.7
Suicide 163-164	9	1	10	4.1	3.7	6.9
Homicide 165-168	8	17	25	10.2	10.2	15.8
Accidental death (exclusive of motor vehicle 169, 171-195	68	40	108	44.0	41.1	51.6
Motor vehicle 170	39	10	49	20.0	16.3	14.6
All other known causes	230	132	362	147.7	152.2	130.5
Ill defined and unknown causes 199-200	57	93	150	61.2	70.0	67.1

**Not available.

*Births and death rates per 1,000 population; infant death rate per 1,000 live births; stillbirths per 1,000 total births (inclusive of stillbirths); from specific causes per 100,000 population; from puerperal causes, per 10,000 total births.

BOOK ABSTRACTS AND REVIEWS

Techniques of Supervision in Public Health Nursing. By Ruth B. Freeman, R. N., B. S., M. A., Associate Professor of Preventive Medicine and Public Health, and Director of the Course in Public Health Nursing, University of Minnesota. Cloth. Price, $2.75. Pp. 411. Philadelphia and London: W. B. Saunders Company, 1944.

Miss Freeman says, "Supervision is a fascinating pursuit," and endeavors in this book to prove her point.

Problems of supervision are presented and explained from a nursing viewpoint and situations are cited to illustrate supervisory technique. She emphasizes the need for definiteness as well as flexibility. Very specific suggestions are included which give concrete help to the nurse who is new to supervision as well as to the experienced supervisor in public health or institutional nursing.

Practical help is given in planning and carrying out a program of supervision. Many useable analysis and evaluation forms are shown. Responsibilities and activities of a supervisor which are considered include: program planning, job analysis, staff education, developing qualities of leadership, observing the nurse at work, conducting individual conferences, supervising records, planning group meetings, institutes, workshops, case conferences, and seminars, evaluating staff performance, construction and using manuals, improving teaching ability, building social awareness, and meeting the needs of superior, limited, or older nurses.

Because supervisors are carrying increasing responsibilities the staff nurse will appreciate much of this material, particularly the chapters on improving the teaching ability of the staff and helping the nurse to plan her work more effectively.

Each chapter includes an introductory statement, discussion of each item, a summary, and a list of suggested readings.

Mary Lee Parker, R. N.

A Textbook of Pathology. By Robert Allan Moore, M. D., Professor of Pathology, Washington University School of Medicine, St. Louis, Mo. Cloth. Price, $10.00. Pp. 1338, with 513 illustrations, 34 in color. Philadelphia and London: W. B. Saunders Company, 1944.

Moore's Textbook of Pathology is an innovation in the method of presentation of this subject matter. The most important feature is that a great deal more emphasis is placed upon the physiologic and chemical aspects of general pathology than is seen in other similar textbooks. The arrangement according to pathology as seen in metabolic disorders is truly a physiologic set up. It is dealt with in a masterly manner.

The pathology resulting from diseases caused by living agents and their portals of entry is grouped and arranged in Part 2. This is in the usual order as seen in most textbooks of medicine. The pathology produced by physical agents, chemical agents and pregnancy is a new arrangement. The addition of the vitamin deficiencies as separate pathologic entities is well presented.

Part 7 deals with the pathology of diseases of unknown or obscure causes. There are many subjects included in this, however, that should in reality be included in previous chapters dealing with diseases caused by living agents, or diseases related to disturbances in metabolism. The separation in this particular instance is somewhat artificial.

In the discussion of factors causing reactions following transfusions no mention is made of the much publicized Rh phenomenon. This is mentioned very briefly under erythroblastosis.

The clinical-pathological correlation of the various diseases is one of the most notable improvements seen in any textbooks of pathology.

A new subject not usually seen in such texts is diseases caused by changes in atmospheric pressure. It is extremely brief and opens up a new field which is being widely explored in military medicine.

Each subject throughout the entire book is presented very briefly and concisely. Controversial points are excluded but the subject is not presented in a didactic form. For the average physician it serves as an excellent source of information as it overcomes the difficulty seen so frequently in similar works; namely, a mass of minute detail, almost encyclopedic in type and most difficult to read. This volume of physiologic pathology is truly easy to read and still remains an authoritative presentation.

The bibliography at the end of each chapter is most complete and the references are relatively recent. The index, which occupies 46 pages, is unusual in that it contains a double entry of each disease and lesion; first under the name of the disease, and second, under the organ involved. Well established diseases are listed under the first word of their most common title. Also, wherever illustrations occur regarding the reference, that page number is placed in italics. All of these features, namely, the type, set up, paper, photographic reproductions, the few diagrams and drawings, excellent index, etc., make Moore's new Textbook of Pathology a valuable asset.

Norman Van Wezel.

Medical Diagnosis. By Roscoe L. Pullen, A. B., M. D., Instructor in Medicine, Tulane University of Louisiana School of Medicine; Assistant Clinical Director, Charity Hospital of Louisiana at New Orleans; formerly Fellow in Clinical Endocrinology, Duke University School of Medicine and Duke Hospital, Durham, North Carolina. With a foreword by John H. Musser, B. S., M. D., F. A. C. P., Professor of Medicine, Tulane University of Louisiana School of Medicine; Senior Visiting Physician, Charity Hospital of Louisiana at New Orleans Cloth. Price, $10.00. Pp. 1106, with 584 illustrations and 12 colored plates. Philadelphia and London: W. B. Saunders Company, 1944.

Dr. Pullen has presented a text on medical diagnosis which differs from other similar works in that it goes beyond the elementary examination and considers the patient from every possible viewpoint, including physical, endoscopic, laboratory and psychiatric examinations. It is written

in a rather didactic manner, indicating its prime use for senior medical students and general practitioners.

The examination of the patient is taken up systematically. Each portion of the body is dealt with adequately by men who are well recognized in their individual specialties. The examination begins with the general introduction to the patient and then covers the entire anatomy. Incorporated in each examination is included laboratory findings and any special procedures such as x-ray, endoscopic examination, etc.

Throughout the entire text are excellent photographs. There could well have been an increase in the number of colored photographs, particularly in the section concerning skin diseases.

The contribution in oral diagnosis is made by Dr. K. H. Thoma. Much of the contents of this chapter, of course, is taken from Dr. Thoma's recent publication on oral diagnosis. It cannot be improved upon. Photographic illustrations of lesions about the mouth are vivid; the differential diagnosis complete.

In the examination of the breast Dr. Auchincloss has graphically and photographically illustrated the pathologic lesions of the breast as they differ from the normal. There are diagrams superimposed upon photographs that clarify the facts presented in the text.

Dr. Wilson in his presentation of diagnosis of chest diseases has used the same technique; namely, presenting x-ray reproductions on one page and on the opposite side the diagrams indicating various physical changes that are seen. It is a most complete and thorough presentation. The simple illustrations demonstrating bronchial obstruction can be widely used in the discussion and explanation to the patient.

The examination of the heart by Dr. Sodeman is in general rather complete and adequate. However, the study of the electrocardiogram, particularly the physics, is presented in considerable amount of detail which is somewhat more technical than the average general practitioner and certainly the senior medical student can appreciate. The reproductions of the electrocardiograms are excellent. Their selection has been made with great care.

The neurologic examination presented by Dr. Alexander uses a new factor which has not been seen in many texts. The use of the superimposed speedithron flashes graphically shows tremors, line of motion, pathologic position, etc. The many photographs demonstrating the usual reflexes certainly clarify some of the difficulties incurred during the neurologic examination. The use of differential tests in the diagnosis of hysteria is well illustrated.

Perhaps one of the most interesting chapters is the psychiatric examination. It is presented by Dr. Moore in a leisurely, conversational manner. It omits a great deal of terminology and discusses the patient from the viewpoint of a general practitioner who is at the moment concentrating on the psychiatric problem. Dr. Moore makes the examination appear simple, and outlines a method not only of diagnosis but of psychotherapy. This particular chapter can well be read by every physician who deals with the emotional side of patients. It contains much that is common sense.

The subject of electro-encephalography is new. It is briefly presented in order that it may serve as a subject for further investigation.

Such subjects as coma, sterility, and occupational and military problems are included very briefly and probably only for completeness sake.

The index, however, after careful perusal, does not appear to be complete. For example, such things as jaundice and icterus have only one reference, namely, with the skin. They are not included in the index under diseases of the liver or hepatic disorders. Similar omissions are minor, however, but a larger index would have improved the text as an office reference book where rapid search for subject matter is needed.

These criticisms are minor. Pullen's Medical Diagnosis as applied in practice stands as a landmark in recently published texts.

Norman Van Wezel.

Importation of Malaria—To a tremendously greater extent than the last World War, the current war is being and will be fought in highly malarious situations. This means that ever-increasing numbers of the individuals who make up our armed forces, and a smaller number of civilians associated with them, will become infected with malaria parasites and inevitably will return with these infections. These individuals will have a national distribution and their total number will increase sharply with demobilization.

The question, "What will be the effect of this circumstance on our national public health?" arises naturally. With the current lack of precise information, the question cannot be answered fully now, but available knowledge permits a reasonable definition of the problem and suggests the steps which should be taken to solve it. This knowledge embraces general and specific information on the nature of the imported infections, the current situation with regard to the epidemiology of malaria in this country, and the methods for the prevention of malaria transmission at our disposal.

To date approximately ninety per cent of the malaria infections imported by returning Army personnel are with Plasmodium vivax which produces tertian disease (McCoy, 1944). Unless areas where Plasmodium malariae, which produces quartan fever, is prevalent are invaded in great force, it is logical to expect that the principal imported parasite will continue to be Plasmodium vivax. This is true in spite of the fact that the characteristic malaria of tropical regions is estivo-autumnal or malignant tertian fever. produced by Plasmodium falciparum; for instance, it is known that in the Pacific war areas there is a higher incidence of falciparum than vivax infections. The relative infrequency of the importation of falciparum is due to the biological and clinical characteristics of these infections. In white individuals, unless falciparum infections are brought under control promptly, death often ensues rapidly; but their response to adequate treatment is good, and it is believed that most infections with this species do not persist much longer than a year.—*Watson, J. Tennessee M. A., Jan.* '45.

AMERICAN MEDICAL ASSOCIATION NEWS

1945 ANNUAL SESSION OF A. M. A. IS CANCELED

"The Board of Trustees of the American Medical Association, after consideration of all factors involved," The Journal of the Association says in its January 20 issue, "has officially announced the cancelation of the Ninety-Fifth Annual Session of the Association scheduled for Philadelphia June 18-22. This is the fourth time in the Association's history and the second time during the present war that an annual session has not been held. In 1861 the annual session was postponed for a year because of the outbreak of the war between the states. In 1862 it was again postponed for a year. The 1943 annual session scheduled to have been held in San Francisco was canceled. Last year the session was held in Chicago. It is expected that a meeting of the House of Delegates will probably be held in 1945 in Chicago at a time to be announced later in The Journal. The action this year is taken voluntarily in order to cooperate to the fullest possible extent with the request of the Office of Defense Transportation and in the interest of the nation's war effort."

FIND THAT A VIRUS CAN INDUCE PRIMARY ATYPICAL PNEUMONIA

Investigations by the Army Medical Department's Commission on Acute Respiratory Diseases, made with 42 conscientious objectors, all of whom had volunteered for the experiment, produced results demonstrating that bacteria free filtrates, presumably containing a virus, can induce primary atypical pneumonia in man, the Commission reports in The Journal of the American Medical Association for January 20.

The report explains that studies on the cause of primary atypical pneumonia which have been reported recently in medical literature have shown that bacteria, rickettsias, fungi and viruses, particularly those of the psittacosis or parrot fever group, may produce the syndrome of atypical pneumonia. No causal relationship to these known agents, however, has been demonstrated in the majority of cases, it says, "and the assumption has been made that an unknown virus is the causative factor."

The inoculum given the 42 volunteers consisted of throat washings and sputum collected from 6 cases of atypical pneumonia produced in a previous experiment by inoculation of untreated throat washings and sputums from cases in a military hospital. Each of the experimentally produced illnesses had the characteristics of primary atypical pneumonia.

One third of the inoculum was filtered, to remove bacteria; another third was autoclaved at 15 pounds pressure for 10 minutes, which apparently killed all disease-producing organisms, and the remainder was untreated.

Three of the 12 patients receiving the filtered material and 3 of the 12 receiving the untreated inoculum developed characteristic symptoms, signs and x-ray evidence of primary pneumonia. None of the 18 receiving the autoclaved material was similarly affected.

Another finding of interest was the fact that in the 3 patients receiving the filtered material the onset of the disease occurred on the twelfth, thirteenth and fourteenth days respectively after inoculation. The onset in 2 patients receiving untreated material was on the seventh day and in the third patient it occurred on the eighth day after inoculation.

The symptoms and signs observed at onset and during the course of the disease did not differ materially in the two groups. In general, illnesses were milder in patients in the "filtered" group.

ENRICHMENT OF BREAD AFTER THE WAR

Pointing out that both federal and state action will be required to assure continuation of the benefits of enriched bread, now compulsory under wartime regulations, The Journal of the American Medical Association for January 20 declares such a program should have the active support of all informed persons. The Journal explains that "Among the important applications of the numerous advances in nutrition is the devel-

opment of the program for enrichment of food. By order of the War Food Administration all baker's white bread, white rolls and sweet rolls must be enriched with vitamins of the B complex and iron to stated levels. The content of enriched baked goods in thiamine, niacin and iron is thus brought to the desirable high levels of these constituents found in similar products made from whole wheat flour . . .

"The continuance of these benefits to the nation's nutritional standard is not now assured beyond the duration of the emergency. The compulsory enrichment of baker's white bread and rolls terminates with the resolution of the wartime powers of the War Food administration. The problem then reverts on the individual states as to whether enrichment of these foods will continue to be required. Legislation at the federal level would affect only those products handled in interstate commerce . . ."

REPORT PENICILLIN IS EFFECTIVE TREATMENT FOR RAT BITE FEVER

Penicillin is an effective treatment for rat bite fever, W. A. Altemeier, M. D., Harry Snyder, M. D., and Gertrude Howe, M. D., Cincinnati, report in The Journal of the American Medical Association for February 3.

Although rat bite fever is a relatively rare disease of man, there is one form for which no satisfactory treatment agent previously has been available, the investigators point out. This is the form caused by the disease organism Streptobacillus moniliformis. One of the other forms of the disease is caused by the organism Spirillum minus, which responds well to arsenical treatment.

The three investigators say a review of the medical literature reveals only 17 cases of rat bite fever due to Streptobacillus moniliformis in the United States in which the diagnosis was verified by recovery of the organism. In their paper they report 3 additional cases. Penicillin was used in the treatment of these 3 patients, it being the first time the drug had been used for this disease. They say that the response to the penicillin treatment was prompt and permament in 2 cases but in the third a relapse occurred after the administration of an inadequate amount of penicillin.

"A comparison of the course of our cases," they say, "with those previously reported gives the impression that penicillin is an effective chemotherapeutic agent which shortens decidedly the course of the disease.

"In the future, treatment with penicillin is recommended in the therapy of rat bite and Haverhill fevers."

Haverhill fever is caused by the same organism as rat bite fever but without the bite of the rat or another animal.

The three investigators explain that there is some tendency in rat bite fever for the disease to clear up spontaneously after a varying number of relapses. Of the 17 cases reported in medical literature up to and including 1943, there were 2 deaths. Three of the patients were left with persistent arthritis, lasting fifty-three days in one case, eight months in another and for more than two years in the third. In the United States the disease has now been reported in twenty-eight states and the District of Columbia, but the incidence has been greatest in Ohio, Pennsylvania, New York and Illinois. The wild rat is the chief animal source, and, more rarely, the dog, cat, pig, mouse, laboratory white rat and weasel may be the source of infection.

PENICILLIN FOR PNEUMOCOCCIC MENINGITIS

Sixteen patients with pneumococcic meningitis were treated with penicillin with nine deaths whereas among 40 patients treated with sulfonamides but not with penicillin there were thirty-seven deaths, four physicians report in The Journal of the American Medical Association for February 3. Some of those receiving penicillin also were given either sulfadiazine or sulfamerazine. Twenty-one of the 40 patients given either sulfadiazine or sulfamerazine also were given antipneumococcic serum.

"The two groups," Lewis K. Sweet, M. D., Washington, D. C.; Edith Dumoff-Stanley, M. D., Boston; Harry F. Dowling, M. D., Washington, D. C., and Lieutenant Mark H. Lepper, M. C., A. U. S., say in their report, "were shown to be very similar as regards the factors which are important in evaluating the prognosis . . . It is concluded that the optimal treatment of pneumococcic meningitis should include the use of penicillin and sulfadiazine or sulfamerazine . . ."

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Miscellany

NEW METHOD MEASURES CONCENTRATION OF PENICILLIN IN BODY FLUIDS

The results of observations made on penicillin levels in the blood and other body fluids by the use of a relatively simple method which has yielded apparently consistent results and some useful information, are reported by Jean V. Cooke, M. D., and David Goldring, M. D., St. Louis, in The Journal of the American Medical Association for January 13.

The absorption and distribution of penicillin in the various body fluids after parenteral injection and the duration of its survival in body fluids or cavities under normal or disease conditions are questions of considerable interest in penicillin treatment, the two authors point out. Although some studies have been made in certain cases, there has apparently been no method for such measurements that was easily applicable to routine observations in patients.

The method they describe consists in determining the smallest amount of the fluid from a patient which will produce complete inhibition of a standard strain of Staphylococcus aureus.

The results the two physicians report were obtained from patients who for the most part were infants and children in St. Louis Children's Hospital who were receiving penicillin treatment and in addition a few adults in the Barnes Hospital.

They found that after injections into a muscle the concentration of penicillin in the blood reached its highest level within thirty minutes, was still moderately high at one hour and fell rapidly during the second hour but often persisted at lower levels for three to four hours. Blood levels after injection beneath the skin were quite similar to those after injection into a muscle.

Miscellany

A NEW TYPE OF MAGNET REMOVES FOREIGN BODIES FROM STOMACH

PHYSICIAN SAYS IT WILL RENDER UNNECESSARY MANY ABDOMINAL OPERATIONS NOW REQUIRED FOR REMOVAL OF MAGNETIZABLE OBJECTS

A new type of magnet, by which magnetizable foreign bodies in the stomach and windpipe can be removed, thus eliminating operations which often are necessary to remove such objects, is described in The Journal of the American Medical Association for January 13 by Murdock Equen, M. D., of the Ponce de Leon Eye and Ear Infirmary, Atlanta, Ga.

The magnet is composed of alnico, an alloy of aluminum, nickel, cobalt and iron. For the past two years, Dr. Equen says, the new alloy magnet has been available as a small permanent type for use in removing foreign objects from the eye.

The instrument reported for use of the magnet is composed of a tube to which the magnet is attached and which is introduced into the stomach through the mouth and esophagus. At the other end of the tube is a rubber bulb which is used for inflating the stomach. This inflation lifts any collapsed portion of the stomach from the foreign object, such as a pin, allowing the magnet to be passed about freely, and the foreign body is thus unimpeded in being attracted by the magnet.

As Dr. Equen explains, the removal of foreign bodies from the stomach and windpipe by means of the gastroscope and flexible forceps is a very difficult procedure. The constant shifting of the position of the foreign body, in a space as large as a stomach, makes it very difficult to establish contact between the forceps and the object.

Alnico magnets require a considerably stronger magnetizing force to magnetize them completely than do other types of permanent magnet alloys, the author says. At the same time, alnico has more available external energy or attracting power for a given volume or size than has any other permanent magnet material known at the present time.

Dr. Equen presents in his paper a case report that he says is typical of the entire series of cases of foreign bodies removed by the new magnet. He tells of a girl aged 19 months who had swallowed her mother's hairpin twelve hours previous to the time the baby was brought to him. The new instrument was passed down the esophagus and introduced into the stomach of the child. This was done against a background of a fluoroscopic screen which revealed by means of x-ray the position of the hairpin and also of the magnet. The stomach was then inflated, the pin quickly coming into the range of the magnet to which it was attracted and then withdrawn from the stomach. The entire procedure lasted only eight minutes, he said.

"The new alloy magnet, alnico," Dr. Equen concludes, "is being proved of great value to medicine. For the past two years it has been available as a small permanent type eye magnet. Only a minority of foreign bodies of the food and air passages are magnetizable, but among those which are the use of this instrument will render unnecessary many abdominal operations and decrease bronchial instrumentation."

TEACHING OF FOREIGN LANGUAGES

The claim that the teaching of foreign languages in our schools should not be started before the usual high school age should be reexamined, The Journal of the American Medical Association for January 20 says.

"After the war," The Journal explains, "scientific and medical discoveries will doubtless be made in what are now enemy countries and will be described in their own language and scientific periodicals . . . The linguistic ability of most Americans compares unfavorably with that of Europeans and others who are exposed early in life to two or more languages. Many leaders of educational opinion in this country have claimed that there is no good reason to teach foreign languages in the schools before the usual high school age. This claim should be reexamined. Medical science has never failed to recognize the need for widespread dissemination of new discoveries; a most important instrument is comprehension of the language in which the discovery is made. Support of any methods, therefore, by which a greater knowledge of foreign languages can be achieved in this country will deserve the support of the medical profession."

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BACKGROUND

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THE MEDICAL ASSOCIATION OF THE STATE OF ALABAMA

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TOTAL VERSUS SUBTOTAL HYSTERECTOMY

J. O. MORGAN, M. D., F. A. C. S.
Gadsden, Alabama

It is not my desire to advocate total hysterectomy in all cases in which the abdominal removal of the uterus is indicated. There are some cases in which the pathology and anatomic variations are such that total hysterectomy would be unduly hazardous. I believe that a surgeon should not attempt total hysterectomy unless he has made himself proficient in the technique. It is certainly not a procedure for the occasional operator.

It is my opinion that the cervix serves no useful purpose when the body of the uterus has been removed, and it may be the source of much trouble. This is especially true if the patient has borne children, or if a chronic infection exists in the cervix. Many surgeons in discussing this subject would lead one to believe that the prevention of cancer in the remaining cervix is the only advantage of the total operation. I believe that it is only one of the advantages. I do not know just how frequently carcinoma of the cervix occurs after subtotal hysterectomy, and the published statistics that I have been able to find are so variable that it has not been possible for me to come to any definite conclusions. I am sure that all will agree that removal of the cervix with the uterus is a good prophylactic measure if it can be done without increasing mortality or morbidity to any appreciable extent.

Chronic endocervicitis is frequently associated with diseases requiring hysterectomy. Our pathologist reported this condition to be present in 30 per cent of all cases in which complete removal of the uterus was carried out.

We frequently see women with troublesome leukorrhea, and other symptoms resulting from a diseased cervix, who have had a subtotal hysterectomy. It is reasonable to believe that chronic endocervicitis might be aggravated by incomplete removal of the uterus since the blood supply to the cervix is frequently interfered with by this operation. Benign tumors of the cervix occasionally require our attention following subtotal removal of the uterus.

It is a common practice by those who do not, as a rule, do complete hysterectomy to cauterize the cervix or do a conization at the time of subtotal removal of the uterus. It has been my experience that this does not completely remove the diseased portion of the cervix. Cauterization of the cervix may result in stenosis with the accumulation of mucus in the upper part of the cervical canal. I believe that these procedures are more likely to result in infection than complete removal of the uterus, provided the patient's vagina has been properly prepared. Since diseased cervical glands may extend very deeply into the muscular portion of the cervix, an attempt to get rid of the diseased tissue by coning out the cervix or cauterization is frequently inadequate. Many of the glands may be cut across, thus opening avenues of infection and leaving behind portions of glands which may continue to give trouble.

Many hesitate to do total hysterectomy fearing infection which may result from invading the vagina. It has been my experience that infection of the abdominal incision and peritonitis do not occur any more frequently following total removal of the

Read before the Association in annual session, Montgomery, April 18, 1944.

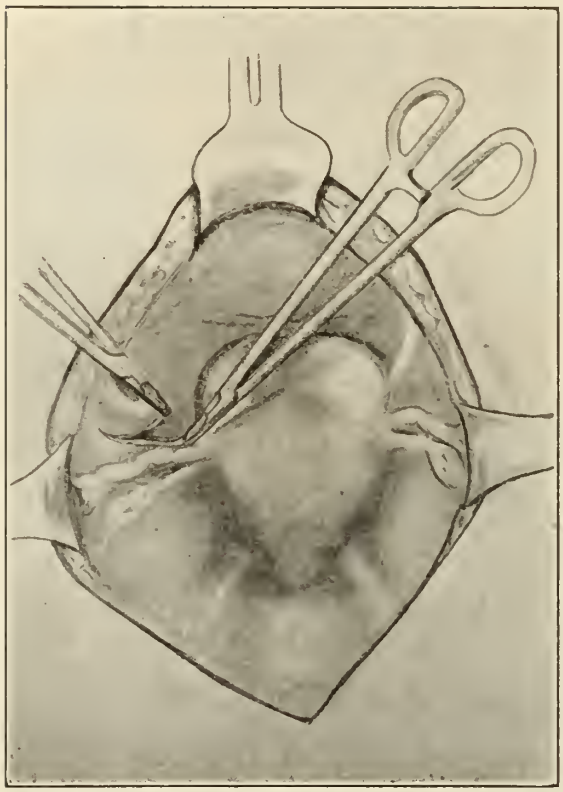

Fig. 1. The round ligament has been clamped and cut, and the broad ligament opened by cutting the round ligament from it toward the internal inguinal ring.

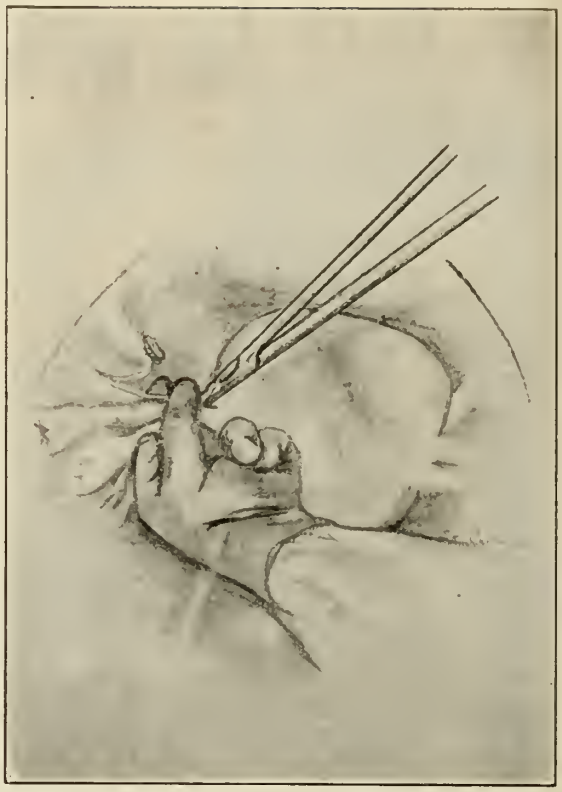

Fig. 2. The index finger is pushed through the broad ligament where the opening had previously been made. This facilitates applying the clamps before cutting the infundibulopelvic or utero-ovarian ligament.

uterus than they do when the cervix is not removed. My practice is to cleanse the vagina and vaginal portion of the cervix by thoroughly washing with soap and water, followed by drying, and painting the parts with a standard germicidal as is done on the skin.

Shortening of the vagina and prolapse of the vagina and bladder are thought by some to occur frequently after complete removal of the uterus has been carried out. This has not occurred, to my knowledge, in any of our cases, and we have had the opportunity of following many over a period of several years. In complete removal of the uterus in non-malignant disease, I incise the vaginal vault close to the cervix thus retaining its full length. The uterine vessels and a portion of the cardinal ligaments are suture-ligated to the top of the vagina after the vagina has been closed by sutures. These structures together with the round and utero-sacral ligaments, which are also sutured to the vagina, aid in preventing any prolapse.

Injury to the ureters and bladder has not occurred, to our knowledge, in any of our cases in which total hysterectomy was done for non-malignant disease. In order that injury to important structures not occur, it is necessary that adequate exposure be obtained. Under anesthesia that will give good relaxation I carry my incision from the umbilicus to well over the pubis and, if I feel that this is not sufficient, I do not hesitate to carry it to one side and above the umbilicus. However, the additional length is usually not necessary. The patient is placed in Trendelenburg position and the intestines are packed well out of the pelvis. The technique which I am now using for total hysterestomy is that of Masson, somewhat modified. After ligating and cutting the round and infundibulopelvic or utero-ovarian ligaments, depending on whether or not the ovaries are to be removed, and dissecting the bladder from the uterus and upper portion of the vagina, large forceps are

Fig. 3. The round ligaments, the left infundibulopelvic, and the right utero-ovarian ligaments have been cut and ligated. (Leaving the right ovary in this case.)

TABLE 1

	Total 100	Subtotal 100
Number of Cases		
Para		
Nullipara	19	45
Average para	2%	1.5%
Anesthesia		
Gas and ether	8	5
Intravenous	4	2
Spinal	88	93
Time Required		
Minutes	30 to 90	28 to 75
Average in minutes	58	52
Diagnosis		
Fibromyoma	64	81
Cancer of fundus	5	0
Ovarian tumor	10	1
Endometriosis	3	2
Uteroplacental apoplexy	0	3
Uterine polyp	2	0
Metrorrhagia	11	8
Chronic P. I. D.	5	5
Complications		
Infection of incision	5	6
Peritonitis	0	0
Phlebitis	7	4
Pulmonary infarct	1	1
Cystitis	4	2
Evidence of damage to ureters or bladder	0	0
Deaths	1	0
Average Postoperative Days in hospital	13	13

Analysis of 100 consecutive cases of total hysterectomy compared with 100 consecutive cases of subtotal hysterectomy.

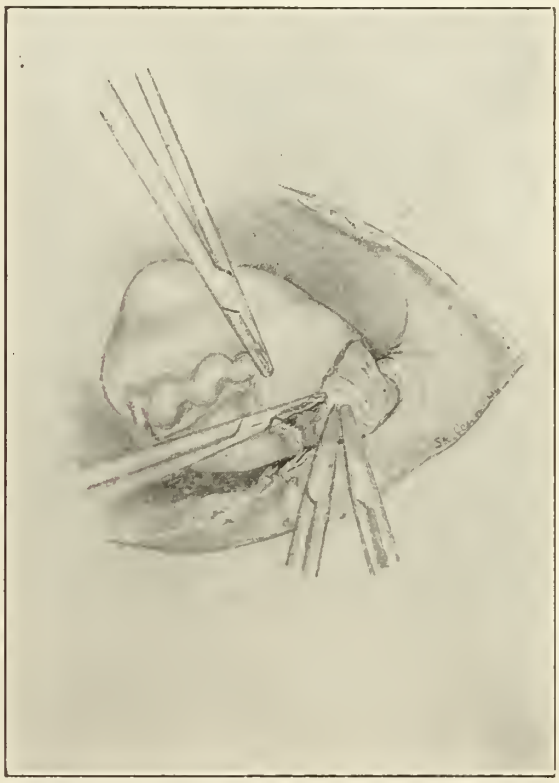

Fig. 4. The bladder has been dissected from the uterus and upper part of the vagina. Clamps have been applied to the uterine vessels and the vessels cut. Note that the hemostats have been applied at the junction of the body of the uterus with the cervix and are at almost right angles to the long axis of the uterus.

applied to the uterine vessels almost at right angles to the uterus at the junction of the cervix with the body. These vessels are then cut and the incisions are carried for a short distance on each side close to the cervix. The uterine vessels are not ligated at this time, but the forceps are left on until the uterus is removed, and the vaginal vault sutured. Then these vessels are suture-ligated to the top of the vagina. By this method the forceps, incisions and suture-ligatures are some distance from the ureters and injury to them is very unlikely. Only occasionally is it necessary to ligate a small bleeding branch of the uterine vessels after the forceps and ligatures have been applied in this manner.

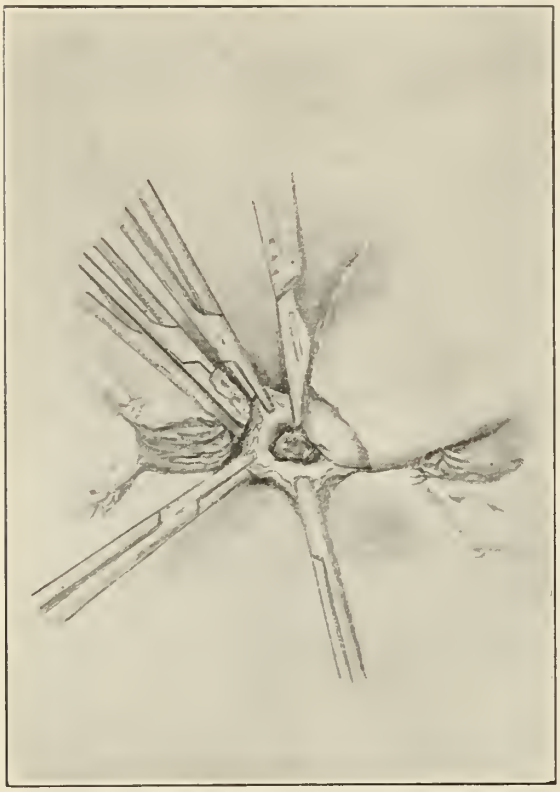

Fig. 5. The uterus is removed by incising the vaginal vault and circumcising it close to the cervix. Note that the hemostats are still on the uterine vessels.

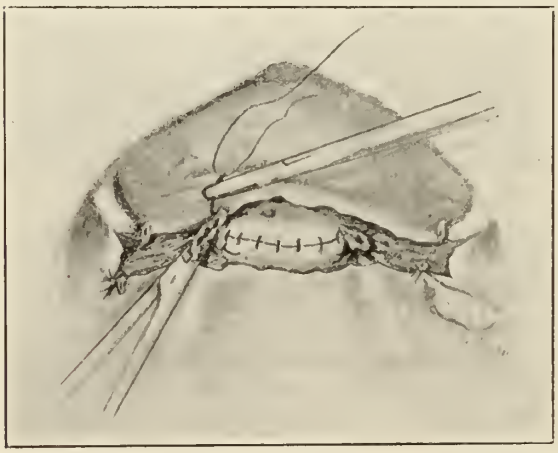

Fig. 6. The vagina has been closed with sutures, and on the right the uterine vessels and cardinal and uterosacral ligaments have been sature-ligated to the vagina.

I have recently reviewed 100 consecutive cases in which I had done total hysterectomy, and also 100 consecutive cases in which I had carried out subtotal removal of the uterus. It was found that the average

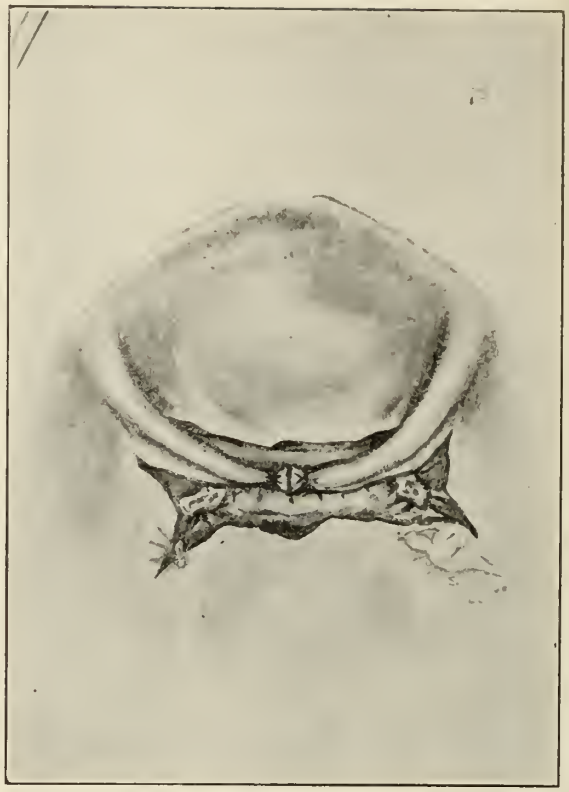

Fig. 7. The round ligaments have been sutured to the vagina.

age of those having total hysterectomy was forty and that nineteen per cent had not borne children, while the average age of those having the subtotal operation was thirty-six years, and forty-five per cent were nulliparous. The average time required for the operation, when total removal of the uterus was carried out, was 58 minutes, and for subtotal hysterectomy 52 minutes were required. It will be seen from the table of analysis (Table 1) that these operations were done for quite a variety of causes. Fibromyoma was the chief reason for surgery in 64 per cent of the cases in which total hysterectomy was done, and 81 per cent of the subtotal cases. The complications occurred with almost equal frequency in the two groups. The average postoperative hospital days was the same and there was one death in those having total hysterectomy, and no deaths in those in which the cervix was not removed.

The review of these cases would indicate that removal of the cervix with the uterus is justifiable when abdominal hysterectomy is

Fig. 8. The raw surface has been covered with peritoneum. Note that the remaining ovary is some distance from the vagina.

done. This is especially true if any doubt exists as to pathology in the cervix.

Transmission of Syphilis—Syphilis may be transmitted during the incubation period of two or three weeks or more following exposure and infection before the development of a chancre at the site of inoculation. But the disease is most contagious during the primary or chancre stage and the secondary stage of the disease characterized by eruptions of the skin and mucous membranes, with special reference to the mouth; also during later periods when relapses of the disease result in active or open mucocutaneous lesions. In most instances the disease is contracted by exposure to syphilitic individuals infected within a period of two years. In the case of an individual with syphilis of five years' duration, the chances of transmission to others are about one in 20 or less and after ten years, one in 100 or less, although it is not possible to ignore the risks of infection in later years of the disease. The semen may be infectious during the first four years of the disease but rarely so thereafter, regardless of whether or not treatment has been given. It is thought possible, however, for an untreated syphilitic mother to transmit *Treponema pallidum* to a nursing infant by way of her milk during the first four or five years of the disease; under these conditions it is safer for her not to nurse her child.—*Kolmer, New Orleans M. & S. J., February* '45.

PLANNING FOR MEDICAL CARE IN THE POSTWAR PERIOD

WITH PARTICULAR REFERENCE TO ALABAMA

PART II

JOHN NEWDORP, M. D.
Surgeon (R), U. S. Public Health Service
Atlanta, Georgia

III. FACTORS RESPONSIBLE FOR THE PRESENT SITUATION IN ALABAMA

It is noteworthy that, in general, the more favorable conditions of medical care that exist on a national level coincide with a more favorable per capita income. Likewise, those states favored with the greatest per capita income generally reflect this by a higher level of medical facilities and personnel and more favorable vital statistics than those which exist on a national level. This can easily be demonstrated by a statistical study but it is unnecessary as most physicians are aware of these facts.

The unfavorable status of medical care in Alabama is not due to the inadequacies of the profession but is a reflection of the low per capita income of the state and its rural character. These factors are responsible for the insufficient number of doctors, dentists, nurses and public health workers, and the lack of medical facilities such as hospitals, clinics and adequate health department quarters. They are also responsible for the poor quality of service rendered in many rural areas because they deprive the rural phy-

This contribution is being published in three parts. The first installment appeared in the February number.

sician of modern facilities and opportunity for postgraduate study.

Poverty not only affects the quality and quantity of medical care provided in Alabama. Ignorance, malnutrition, poor housing and inadequate sanitary facilities are almost inseparable from poverty and bring with them illness or ready susceptibility to illness. Provision of medical care once illness occurs because of these factors is not the solution to the problem. However, if the physicians of Alabama were given the same facilities and opportunities as physicians in the wealthier states, there is every reason to believe that the medical care thus made available would vastly improve the health of Alabama's citizens.

Were the costs of medical care spread evenly over the entire population, the problem might not be so serious but the problem is accentuated by the uneven and unpredictable incidence of the risk. This is a particularly serious matter in a population with a low per capita income because the margin between total earnings and funds needed for basic essentials is very small. As a consequence, the uneven spread of the costs results in considerable hardship to the individual incurring the costs and the inability of the physician to collect adequate remuneration for his services.

The problems arising from the distribution of the costs for medical care is worthy of some study as it undoubtedly is a factor contributing to the serious situation in Alabama. The distribution of the costs of medical care has been the subject of many studies, one of which, "What Families Spend for Medical Care,"[17] has been used for most of the material presented here.

There is apparently a direct relationship between the size of income and expenditures

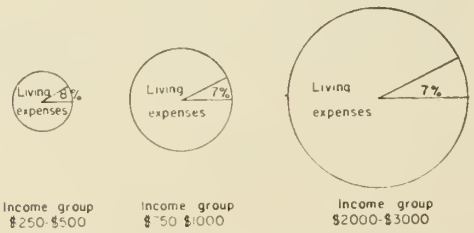

Fig. 6. Living expenses may be larger but the share for medical care remains nearly the same.

17. Pennock, J. L., and Angle, G. M.: What Families Spend for Medical Care, Washington, D. C., U. S. Department of Agriculture, 1944.

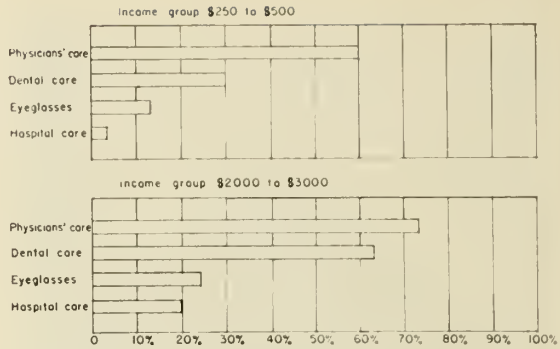

Fig. 7. As income increases, the percentage of families with expenditures for medical care increases.

for medical care. This is demonstrated by Figure 6 which reveals that, regardless of the living expense, the share spent for medical care in the income groups studied remains about the same.

Not only is there an increased expenditure for medical care as income increases but there is an increase in the *proportion* of families incurring the expense. This is graphically shown by Figure 7 illustrating the percentage of families with expenditures for medical care in two income groups. This does not indicate a greater amount of illness among the high income families but, instead, the difference in the amount of care which the families can afford to purchase. This is indicated by the fact that the higher income groups utilize physicians little more than do low income groups but make far more use of dentists and hospitals. (See Figure 7.) Care by a physician, the first step in medical care, is about the most that the low income family can afford, and modern medicine with all of its facilities and services is utilized for the most part only in an emergency. This tendency is evidenced by Figue 8 which demonstrates that, though the amounts spent for medical care increase with income, the proportion spent for certain

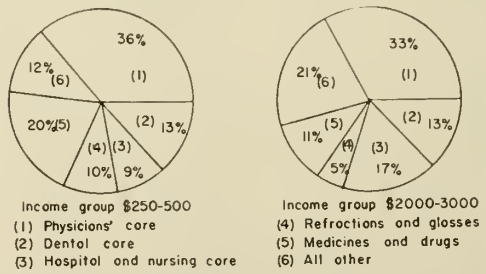

Fig. 8. How the medical dollar is spent at different income levels.

items decreases. Thus a decreasing proportion is spent for physician's services, medicines and drugs and refractions and eyeglasses but an increasing amount is spent for hospital care and private duty nurses.

It is evident then that the per capita income of the average Alabama family is a factor in the amount of medical care which it purchases. Note how closely the charts coincide with the conditions described in the state of Alabama in Part II previously published. The adequacy of the physician supply was 66 percent but the supply of dentists was 31 percent. Compare these data with those presented in Figure 7 which reveals that in low income families twice as many families have expenditures for medical care as those having expenditures for dental care. Similar comparisons can be made for hospital care and the facilities available for hospitalization in Alabama. These similarities are not entirely a coincidence.

Unfortunately, while it is possible to generalize about the average medical expenses of large groups of families, *illness affects the individual* and expenditures for individual families vary widely. Such variations in expenditures among families within the same income group should be considered. The analyses presented in Figures 9 to 11 are for farm families in the medium income group. They had an income between $750 and $1000.

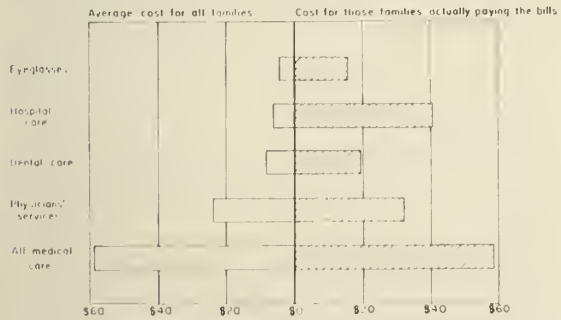

Fig. 9. The families that incur the expense pay the bills.

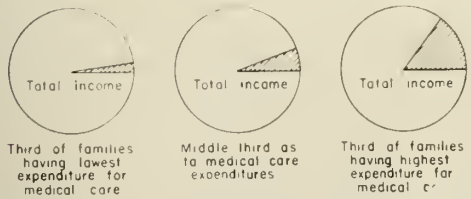

Fig. 10. You can't predict the slice medical care will take.

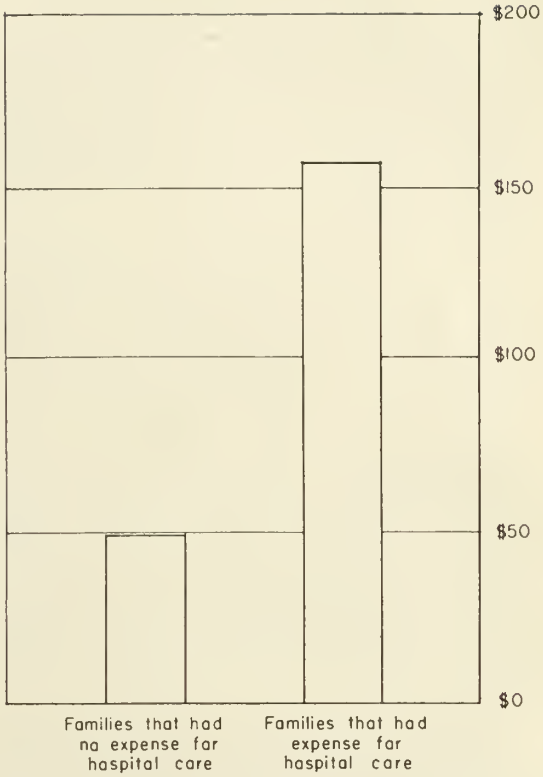

Fig. 11. When someone goes to the hospital, expense for medical care shoots up.

The same general relationships shown tend to apply to all income groups.

Medical expenditures can be classified as either normal or abnormal. Normal expenditures are those incurred in preventive care and the treatment of minor illnesses or injuries. The vast majority of the families in any one income group will have only this type of expenditure, and the amount spent by them for medical care will be below the average for the group. A small minority of families will have abnormal illnesses of the catastrophic type and these families will incur expenses far above the average for the income group. It is the family in which the illness occurs which must foot the bill. This is demonstrated by Figure 9 in which the average expense per family for all families in the group is compared with the average expense per family for those families in the same group that actually had the medical expense. Note particularly the differences that exist between the average cost of the hospital care to those families actually paying the bills.

Further differences between normal and abnormal expenses can be demonstrated by

dividing families at about the same income level into three equal groups according to the amount they spend for medical care. The cost to the group in the lower third is very small, the cost to the third in the middle third is less than average, but the third having the highest cost carries a very heavy burden. (See Figure 10.)

Figure 11 demonstrates the increased cost of care when hospitalization is required. Note that families having expense for hospital care spent three times more for medical care than did those with no expense for hospital care.

These charts are based on actual expenditures, and free care received is not included.

From consideration of these variations in cost to individual families, it is easy to realize that the low per capita income of families in Alabama makes it difficult to support an adequate number of physicians and dentists as well as maintain adequate hospital facilities.

Stated in another way, a family with an annual income of $3,000 is in better position to pay 20 percent of this amount for medical care than the person with $300 annual income. When the difference between income and costs for essentials is small and calamitous illness occurs, the physician is frequently not paid.

In discussing the amount spent by families in the same income groups, it should be emphasized that while farm families spend approximately as much for medical care as city families with the same income, this is of little significance because most farm families have lower incomes than city families. In 1941, the median net cash income of farm families was less than half that of urban families.[17]

This information gives us some understanding of the reasons underlying the inadequacies of physician and dentist supply and of hospital facilities. Further information may be gained from a revealing study of local factors which determine location of physicians[18] made by the U. S. Public Health Service. The evidence presented demonstrated that the most important factors in determining the location of young physi-

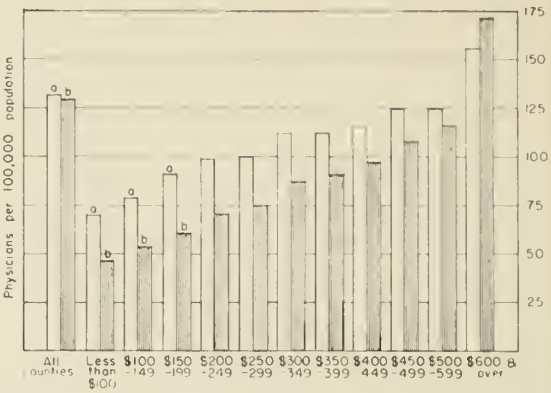

Fig. 12. As the per capita income increases, the ratio of physicians to population increases. The increase in this tendency from 1923 to 1938 is evident. a—1923; b—1938.

Fig. 13. As the per capita income increases, the number of physicians under 45 years of age per 100,000 population rises. This was true in 1923 and was accentuated in 1938. a—1923; b—1938.

cians can be stated in the order of their importance as follows:

1. The wealth of the community.
2. The facilities for hospitalization of patients.
3. The availability of consultants and specialists in the various fields of medicine.
4. The character of the community.

Each factor deserves further consideration.

1. *Wealth of the Community*: The per capita income of the population is *the* most important factor in determining the ratio of physicians to the population. Workers studied the distribution of physicians over the entire nation in relation to per capita income as reflected by the effective buying income, and Figures 12 and 13 prepared from this information summarize the findings.

From this study it is evident that in 1938

18. Mountin, J. W.; Pennell, E. H., and Nicolay, V.: Location and Movement of Physicians, 1923 and 1938; Effect of Local Factors Upon Location, Pub. Health Reports 51: 1945 (Dec. 18) 1942.

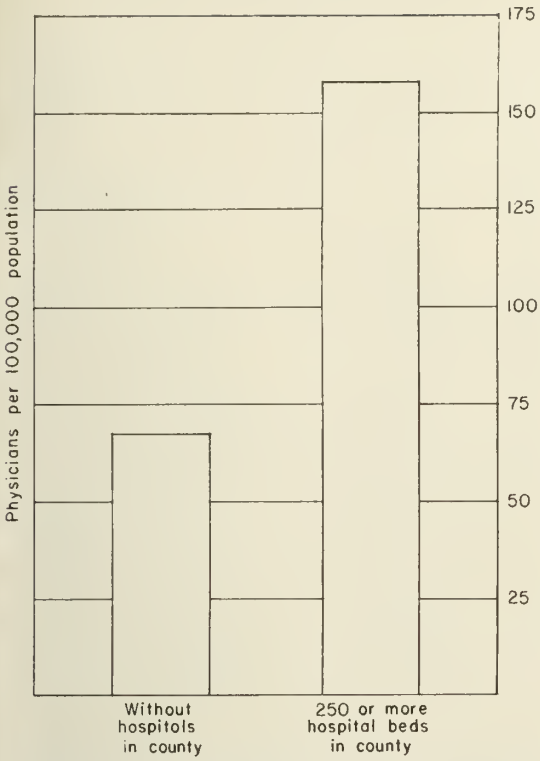

Fig. 14. This demonstrates the effect of hospital facilities in determining the location of physicians.

"in counties with the highest per capita income the physician-population ratio was nearly four times as great as in the poorest counties; this ratio for physicians under 45 years of age was eight times as great." The obvious conclusion from these facts as applied to Alabama is inescapable.

2. *The Facilities for Hospitalization of Patients*: The influence of the hospital in determining the location of physicians is important. The report states: "In modern medical practice the hospital is an invaluable adjunct. Such an institution affords means for the accurate diagnosis and proper treatment of illness and in many cases is essential for the care and recovery of patients. . . . For the country as a whole there were in 1938 only 67 *physicians* per 100,000 population in counties without general or allied special hospitals *as contrasted with* 157 for counties in which there were 250 beds or more." (See Figure 14.)

The authors go on to point out that "regardless of the income class of the county, the presence of large numbers of hospital beds reflected more attractive locations for physicians than did the limitation or absence of these facilities. *This was especially true of physicians under* 45 *years of age.* In all income classes the ratios of young physicians to population were twice as great where hospital beds were numerous as in counties without such facilities. The important contribution made by accessory facilities for medical care represented by large numbers of hospital beds upon the size of physician-population ratios suggests that *such facilities alone afford attraction for establishing medical practice apart from other factors such as wealth, population expansion and urban character of counties.*"

It is appropriate, while considering the question of hospitals, to comment on hospitals in Alabama. There are many small hospitals scattered over the State and it might be supposed that these should interest the young physician in entering these communities. However, with the exception of our major population centers, the large majority of these hospitals are owned by physicians. In most cases, one or two physicians own the hospital, and its x-ray and laboratory facilities are usually reserved exclusively for their use. Young physicians entering such a community frequently must turn over their patients to the owner of the hospital for x-ray or laboratory work, and also for surgery. This is often true even when their training has been such that they could perform much of the surgery themselves. Rather than do this, they will often locate in a larger community where they are able to become members of the staff and make full use of their training. This does not apply to every hospital that is owned by a physician, but it is true in a sufficient number of cases to be a factor in our shortage of physicians in some areas.

3. *Availability of Consultants and Specialists in Various Fields of Medicine*: The Public Health Service study states: "Another important adjunct to the practice of modern medicine is the accessibility of professional associates for consultation and exchange of professional ideas. The opportunities for consultation and collaboration in the case of obscure conditions become greater as the number of physicians in an area is increased. Where the provisions for medical care in a county are limited to a small number of physicians, the opportunities for in-

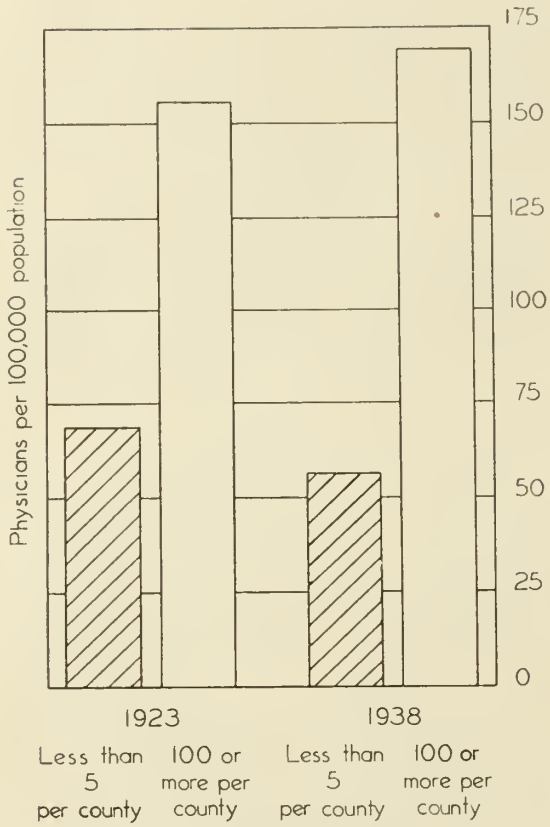

Fig. 15. Physicians tend to locate in counties where physicians are already numerous. Note that this trend was accentuated between 1923 and 1938.

Fig. 16. Counties with no incorporated places of 2,500 or more (rural) attract fewer physicians than those with cities of 50,000 or less (mixed) and far fewer than those with cities of 50,000 or more (urban). Note again how this trend was accentuated between 1923 and 1938.

terchange of professional ideas are fewer than in counties where the number of physicians is large." The effect of this factor is demonstrated by Figure 15 which is based on figures from the Public Health Service study. This reveals that, in counties where physicians in 1931 numbered less than 5 per county, there were only 69 physicians per 100,000 population in 1923 and the number had declined to 57 by 1938. Where there were 100 or more physicians per county in 1931, the ratio was 156 in 1923 and had been elevated to 170 in 1938.

4. *The Character of the Community*: The present day medical student is rather carefully selected before he enters school. He usually completes three or four years of college work before entering upon his professional training. If he was reared in a small town, he usually leaves home to attend college. He attends medical school in a large city and his associates are a highly intelligent group of individuals. He has opportunity to enjoy many cultural developments possible only in the large city. He works in hospitals with the latest and finest type of equipment. If he is of rural origin, he frequently acquires an entirely different outlook on life and often prefers locating in a city or in an urban area.

The high degree of association between the urban character of a county and the number of physicians located therein is shown by Figure 16 which is based on figures from the same report.[18] It reveals that in 1923 there were 92 physicians per 100,000 population residing in strictly rural counties (no incorporated place of 2,500 or more inhabitants located therein). The presence of urban places of less than 50,000 population in counties was reflected by an average ratio of 115, and counties with cities of 50,000 or more realized 159 physicians per 100,000 population. The corresponding ratios for 1938 were 69,100 and 174.

It is possible to conclude, then, that the underlying factors in the medical care problem in Alabama are primarily these:

1. The low per capita income.

2. The lack of hospital and other health facilities.

3. The rural character of much of the State.

4. The uneven distribution of the costs of medical care.

It is also possible to conclude that the situation is becoming worse instead of better. These facts are already known to most members of the medical profession in a general way and an understanding of them is fundamental to the solution of the medical care problem.

(To be concluded)

WHAT A SURGEON SHOULD KNOW OF RADIOLOGY IN TREATING MALIGNANCY

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It is with a deep sense of honor but with some trepidation that I accept this privilege of addressing you, on whose shoulders has fallen and falls a responsibility far greater than on any other branch of our profession. What information can I give to you who have the anatomic details of the human body at your finger tips; and who must know and recognize pathologic deviation at a glance? The thought entered my mind of the refresher courses so popular in the national meetings of our own specialty: just a review of the things we all should and do know, but in the stress of service usually mislay or forget. I decided that a review of the salient points in radiology, familar to you I feel sure but possibly pushed back into some hidden recess of your minds by other more important subjects, might be of some value to you.

While we meet frequently in diagnosis, and while on certain, and I hope not too frequent, occasions we disagree in the field of fracture results, yet there is no place in medicine where teamwork is so essential if results are to be secured as in treating malignancy in its various forms. The importance of that treatment depends to a large extent on another member of your team; for I feel the surgeon should lead the team just as he leads his operative team in his routine work. I refer to the pathologist. On the result of his biopsy report rests not only the probable fate of the patient, but the determination of the methods to be used in treating that case are definitely governed thereby. In my limited experience, for example, I have seen results obtained in grades I and II and a very few in grade III but I cannot recall any grade IV malignancies cured, relieved for any great length of time, or alive past the five-year period. I am not giving statistics but impressions.

Let us first consider deep seated malignancies. The roentgen ray, as you know, was discovered in 1895, so now experience of almost fifty years is placing it in its proper light. We know that kilovoltages of less than 200 are valueless save in those sites where the lesion is at or near the body surface. Probably higher kilovoltages will more nearly give a ray preserving the biologic and physical characteristics of the gamma ray of radium plus penetration, which is the ideal we are seeking. The belief is prevalent that somewhere between 400 and 800 kv. will be the most suitable force. But remember: In supervoltage radiation the penetrability of the ray can be so increased that its effect at the port of exit from the body is equal to that of the port of entrance. This means a diminution into half of the ports through which the malignancy can be attacked and is therefore of definite disadvantage.

In some places, there is a tendency to increase the distance at which the radiation is given, not so much in malignancies unless you class the leukemias as a malignant condition. Here the entire body is radiated. As this takes a great deal more time it is not generally feasible. Moreover it is still unproven. Usually in radiation therapy the time factor is in proportion to three other factors: distance, kilovoltage and filtration.

Radiation is scientifically measured by the ionization chamber which, however, gives no clue as to the biologic characteristics of the ray employed. The unit of the x-ray is the roentgen; that of radium the millicurie.

Read before the Association in annual session, Montgomery, April 18, 1944.

Especially among the older men there is a tendency to measure dosage in time—so many minutes and seconds at such a distance. This is likely to be inaccurate as each machine used has a different output of roentgens and that output varies under the different factors used in the treatment employed. Therefore, one should have in mind certain definite doses to evaluate results definitely. In general I figure the lethal dose of a malignancy at 4,500 to 9,000 roentgens—if that amount reaches the entire tumor mass—not the skin. As you well know, a certain amount of radiation is lost by absorption or diffusion or scattering through each layer of body thickness. Therefore, the part reaching the tumor, known as the depth dose, is proportionate to this loss. Very roughly this can be figured at a loss of 10 per cent of the skin dose for each inch of depth. It varies with the type of tissue penetrated, the kilovoltage used, etc. This explains why what at first glance appears to be a tremendous dose delivered to the patient is in reality only a bare lethal dose to the tumor mass. Also it gives an insight as to why, save in superficial therapy, fractional doses rather than a single massive dose are used.

You may wonder why these details are given. You may feel that these points fall within the province of the radiologist. Yet you should know these if you are to evaluate radiation therapy properly in its entirety; and thus be able to give it its correct place in the total treatment of that case.

A further reason for burdening you with these details is to attempt to fix in your minds an approximation of the amount of time required to deliver a lethal dose of radiation to a given tumor area. Too frequently some members of our profession tell patients when they refer them to us for radiation that the entire set of treatments can be given in a very few days; I have had estimates of from two days up. We radiologists realize that this is done unintentionally but it tends to create a bad impression on the patient. If you say two and we take sixteen to twenty days the patient must wonder why the discrepancy between us and which of us is correct. We have the same difficulty when we refer our patients to you and I do not think that any of you would appreciate our telling the patient that you will operate through a 1½ inch incision or that the patient may leave the hospital at the end of four days. The more areas to be treated, the total dose to the skin in conjunction with the tumor depth dose, and the ability of the patient to take radiation without annoyance, as well as the physical capability of the patient, are all factors which must be taken into consideration where the therapy is to be administered. How much easier you could make it on us, in referring your patients, if you would tell them no more than that Dr. Jones will advise them of "the length of time this treatment takes and will explain why that length of time is required."

Another point that should be emphasized is that larger doses of radiation are required in treating patients of dark skin. Especially does this refer to the Negro race. It means that the pigment in the skin interferes to some extent with the full depth dose reaching the desired point. At any rate I have repeatedly noticed that at least one-third more dosage is required to secure corresponding results in treating malignancies or in treating through the skin in the Negro or dark-skinned races.

There are a few figures it might be wise to keep in mind. They refer to the dangerous doses to the component structures of the skin, and they are based on a single dose. (1) The sebaceous glands are the most delicate; 1200 roentgens will destroy them; (2) next are the hair follicles, at 1600 roentgens; (3) the epidermis at 2000 roentgens; (4) and finally the sweat glands at 2500 roentgens. Where doses not exceeding 400 roentgens and at intervals no closer than every other day are employed, these figures can be safely multiplied by two or two and one-half in deriving estimates of damage. Of course, where it is a question of life or death, all thought of this should be discarded. It is better to have a live patient with an injured skin than a dead one with a normal one. Up to even a few years ago a great deal of therapy often produced a certain amount of disfigurement to the patient in the form of telangiectasis. This is generally believed to be due to the lighter filtrations and weaker kilovoltages we were forced to employ in those days. Now with more copper and higher penetrations we see them much less frequently.

About the most unpleasant minor annoyance of therapy is radiation sickness. This generally is worse the nearer to the abdo-

men the area is that is being treated. I believe it is due to sympathetic nerve shock, plus some degree of injury to the blood. I can be safe in this assertion since practically everything else has been blamed for it. Oxygen masks, liver extract, barbiturates and so on have been used as remedial agents. In general, save in a very small per cent of cases and many of these highly nervous, an empty stomach, the restriction of greasy foods from the diet, and graduated doses to point of tolerance and hypodermic administration of vitamin B_1 in at least fifteen milligram doses before each treatment so alleviated it that the patient could easily tolerate the treatments. It lasts seven to ten days after the series is finished and, of course, returns somewhat intensified in every succeeding series.

An important point to be remembered is that just before therapy every patient should have a complete blood check and urine examination; as the degree of anemia should be ascertained, constantly kept in mind and, if necessary, treated adequately before, during and after each series. It takes fully six months after any great amount of therapy before the blood returns to a normal count. Evidences of kidney inefficiency demand smaller daily doses and a more careful watch on these organs. I have never seen any cardiac lesions so severe as to interfere with careful administration.

Let us now take up the body areas, with special points of interest in each area.

The Skull: Radiation of the skull is always second to surgery, usually only postoperative and to prolong life. I have yet to see the eye structures damaged by careful radiation. It should be kept in mind that alopecia is apt to be permanent if heavy doses for brain tumor are given. This occurs in adults; children do not usually survive that long.

Face and Neck: In malignancies of the larynx, the Coutard or daily fractional method has decreased the mortality rate but it should be remembered that these cases take about three months to recover from the radiation; that during this time they can take liquid foods or a very soft diet only, and that there is considerable discomfort to the patient from the dermatitis resulting therefrom. Blood transfusions to combat anemia may be necessary. The patient should be hospitalized if at all possible. In thyroid malignancies I have never seen hypothyroidism occur; nor have I seen permanent injury to the parathyroid glands. Here was one favorite site of telangiectasis in former days.

Block dissection of glands in malignancies of the face and lips is followed more often because of the textbook recommendation than because of any personal belief on the part of the surgeon of its value. If the lesion is grade one or two, surgery, radiology or a combination will effect a cure in 98 per cent of cases. If grade three or grade four, then treatment of any kind is usually palliative. By the time a block dissection of the neighboring glands can be done, the patient more than likely has developed pulmonary, prostatic, or even abdominal metastases, usually through the blood stream. I can recall two cases of malignancy of the tongue to illustrate; both received ample radiation, not only of the lesion but also of the supraclavicular, cervical and submaxillary glands. In both, the lesion cleared and the patient seemingly recovered. One died within two years of lung metastasis; the other developed an abdominal malignancy.

Chest: Unless thoracic surgery offers hope, I do not believe radiation is of value, even as palliation, in malignancies of the lung. In mediastinal masses, the outlook is more hopeful. Bone malignancies usually yield much better results. Of much greater interest to us is the question of breast malignancies. I believe that prognosis and the type of treatment depend on the biopsy result. In general, stages I and II—stages not grades—are difinitely surgical primarily; the only question is whether you believe the patient should receive preoperative therapy. This is to prevent mitosis in the abnormal cells. If you so believe, then approximately 900 roentgens should be given over the affected side, anteriorly, posteriorly and to the axilla; and surgery should be instituted seven to ten days after the series is completed. I have been asked if this does not increase operative difficulty. This idea I feel certain is a fallacy. The surgeon, however, should remember that in preparing the skin only green soap and water should be used, followed by ether. No antiseptics should be used, and above all no iodine. If postoperative radiation is to be used, it should be given

as soon after surgery as the patient can tolerate it, usually within a week after the removal of the sutures. Waiting a month to six weeks certainly is not necessary and reduces the value. At least two, probably three, series of about 900 roentgens to each area should be given at six-week intervals; and I think a fairly safe rule is to radiate all cases postoperatively showing definite axillary metastases. The general concensus of opinion seems that by so doing 10 to 15 per cent increase in favorable results is secured.

In a limited experience, I am a firm believer in sterilization by radiation in those women in whom the uterus and ovaries are still functioning. Not only do I believe the results, operative and from radiation, are better when this is done, but it definitely prevents the possibility of pregnancy, which very frequently leads to involvement of the other breast. Moreover, I have noticed that the younger the patient, the higher the grade of malignancy.

One of the most difficult problems to decide is what treatment is adequate for these cases in stage III of breast malignancies. You all know them: tumors the size of an orange or larger, ulcerating, cauliflower, bleeding on touch or without, with so foul an odor that no one wishes to be in the same room; large axillary, sometimes supraclavicular, metastases and the rest of the picture. At best they generally have only a few months allowed them. What shall we do for these cases? I foresee that you will disagree with me in my view of the best method of handling them. There is no reward to either of us, save in our own consciences. I believe that whenever possible these cases should have the primary growth removed surgically, preferably by the electro-coagulating knife, and the granulating surface left without any attempt at skin grafting. "But," you say, "you leave a large, raw, ugly surface that probably will not heal." True, but at least it is and can be kept clean, which is a great deal more than was previously the case. After this is done, radiation with heavy filtration will prolong life. Let us be realists. At least if the patient is not cured, the short space of life granted her is made much more comfortable and the terrible odor killed so that the appetite will improve and the family can endure what otherwise is impossible.

Abdomen: In the upper abdomen, if surgery cannot secure results, there can be no help from radiology. Malignancies of the liver, stomach, intestinal tract and kidneys are all surgical cases. Retroperitoneal growths may be palliated, but will not, as a general thing, be cured or life greatly prolonged.

In the lower abdomen, in malignancies of the rectum, prostate gland and the genitalia in men, surgery is, if possible, the method of election. Radium and x-ray are adjuncts. It is in uterine malignancies that teamwork offers the best hope.

Stage I. In cervical malignancies I believe that whenever possible these cases should be operated on, but here I feel that preoperative radiation is strongly indicated. Postoperative radiation with at least 8,000 to 10,000 roentgens in two series of treatments should follow surgery.

Stage II. Where there is vaginal induration or glandular metastases surgery cannot eradicate the disease, so we must depend on radiation. In stages III and IV palliation by radiation is all that can be offered.

In treating cervical malignancies there are two schools of thought at this time. The first holds that results from radiation are at least equally effective, probably slightly more so than surgery; the second school believes that this disease is operative primarily, with or without preoperative and postoperative radiation. Statistics are at variance and reflect definitely the school to which the author belongs. There are favorable points to be considered in either method of treatment. Surgery definitely removes from the patient's mind the constant lurking fear of malignancy remaining or redeveloping in this portion of the body. It yields results more rapidly and, in general, is less expensive. Both of these points are worthy of consideration when the patient is of middle or poorer classes.

Radiation has a definite place where the patient is able to afford complete and thorough treatment and can be satisfactorily watched, and in those cases where systemic disease contraindicates surgery. Even if surgery is chosen I feel that preoperative radiation is strongly indicated and that the operation should be followed by radiation with a minimum of 8,000 to 10,000 roentgens in at least two series of treatments at six-week in-

tervals. If radiation is chosen, then one question to be decided is whether deep therapy should be administered first or radium or vice versa. I think the decision rests mainly with the radiologist. Personally, I am in favor of using radium from 2,000 to 3,000 milligram hours, followed by deep therapy as quickly as the patient recovers from the application of the radium.

It is well to remember that for all practical purposes radium does not cover over an inch in diameter from the point of application. Of course, large amounts of radium can be used in the form of radium bombs. Therefore, if the growth to be treated is of small extent and the entire mass lies within the prescribed field of the radium, I feel that the radium should be used first and then followed with deep therapy. If, however, the mass is large or there is induration of surrounding tissues, the procedure should be reversed. Where there is loss of blood, or hemorrhage is of paramount immediate importance, radium is definitely indicated first. When it is desired to close the lymph channels and to minimize metastases, deep therapy should be used at the start of the case.

In fundal malignancies, the above sketch is equally true. In those ovarian malignancies rather infrequently seen nothing is of value. Usually surgery, x-ray or radium offers no hope. The growth spreads, metastasizes and fills the lower abdomen like wildfire and only sedation can make comfortable the brief stay of the patient.

In abdominal or chest radiation, the surgeon should at all times realize that to be effective radiation must be instituted as quickly as possible in the given case; that the dosage to be administered must, if it is to be effective, approach or enter the domain of permanent skin changes. It is he who must assure the patient that her nausea, her erythema, and her anemia are but temporary. He, in addition to the radiologist, should instruct the patient in the points of post-radiation skin care. He should insist on no injury to the skin by finger nails or rough objects to relieve itching; in routine use of emollients to replace non-functioning oil glands; in restricting the use of alcohol, which renders the skin even more dry; or in the use of any irritant application, including antiseptic solutions. He should understand and property evaluate telangiectasis, and it is he who must decide the best course to pursue when indolent ulcers appear, especially in those cases treated under the older methods of radiation. It is his calm, careful, soothing judgment, judicially given, that will allay nervousness on the part of the patient; and in the unpleasant sequelae occasionally following large doses of radiation he should be able to institute proper treatment, and yet avoid friction, distrust or dissatisfaction on the part of the patient, since, after all, to destroy malignant cells by radiation often entails treatment up to the point of permanent injury of the skin. If one's house is on fire, one does not protest the effect of the water on the rugs and furnishings. Too little radiation is worse than too much; it increases the cell resistance to the point where radiation is valueless.

Skin Malignancies: A few words about superficial or skin malignancies. About 98 per cent of these yield to treatment, if instituted thoroughly and promptly. Surgery or radiologic treatment will deepnd on the desire of the patient and the judgment of the physician. Where there is adherence to underlying structures or where there is danger of scar tissue contraction, radiation offers the better plan. There is little need to mention that all these patients should have Wassermann tests. Not often is the test positive, but in several instances I have been greatly surprised to see a small indolent ulcer of the lip clear up by magic under arsphenamine. It makes little difference whether massive or fractional doses of therapy are used; the results universally are the same where prompt and sufficient treatment is given. If you are interested, low filtration and low kilovoltages at first, followed by copper and higher kilovoltages and with a minimum of 4,500 roentgens, will clear up all these cases. One type I wish to mention: I have seen a few advanced low grade cases with large areas involved. These can be either cleared or rendered inactive with radiation followed by a skin graft as they are too large for excision. Over this area, even after complete healing, radiation must never be used as the graft will almost invariably die if this is done. Flat moles should receive preoperative radiation if excision is to be performed. The melanotic sarcomata I have seen are invariably and rapidly fatal. Any type of treatment at our present command is valueless.

Another point to which I wish to call your attention is the unfortunate use among quite a number of the medical profession of the term "x-ray burn." In dealing with malignancies, superficial or deep, and especially in treating those that are superficial, we must, if we are to get satisfactory results, approach, if we do not actually enter or even exceed, the erythema dose of radiation. This dose if given in a single treatment is generally figured at from 400 to 600 roentgens. This erythema dose as you know takes from ten to fourteen days to become evident and if properly measured and correctly given produces only a transient inflammation of the skin and surrounding structures. To the laity the term "x-ray burn" means overdosage, carelessness or improper administration, or inadequate knowledge. Where it is to be expected, or even where we approach the erythema doses, I always tell the patient what to expect. If you will, through the use of correct nomenclature, assist us and avoid the usage of the term burn, not only will you add to the confidence of the patient for the radiologist but you will in addition avoid much of the unpleasantness which can occur as a result of these reactions.

In conclusion let me again express my thanks for this honor as well as my hope that I have in some degree recalled forgotten points to your minds. In the country at large the bond of friendship as well as of teamwork between surgeon and radiologist is closer than between any two specialties in our profession. Long may this be true. Dealing as he does in what to the average patient is a mysterious armamentarium, and with the constantly present danger to the skin, the moral support, the calm judgment and helpful advice of the surgeon are pillars of support on which the radiologist, so fortunate as to possess them, can lean heavily when all his work seems doomed or for naught. It is such understanding that will yield dividends in results to patients; and it is such cooperation that illuminates the darkness through which we travel until we mortals yield our human failings into the hands of the Great Physician who never fails.

DISCUSSION

Dr. D. C. Donald (Birmingham)—In the treatment of malignancy by radio therapy the surgeon should have a general knowledge of the results from x-ray and radium treatment, versus that offered by surgical measures. In evaluating the two types of treatment, radio therapy and surgery, the surgeon should study his case, individually and be familiar with the principles involved; and with this information he will be able to determine fairly accurately the advantage said therapy offers and its limitations.

Before instituting treatment in malignancy, a routine survey should be made of the case which will determine whether surgery or radiology will give the maximum results. The survey should include a biopsy of the lesion, with respect to its grade and predominating cell growth, the site or location (as to the body area) of the initial lesion, and whether the lesion has remained a local one or has invaded the proximal tissues; and finally if there is evidence of metastases.

In general, the malignant lesions of grade I or 2 are best handled by surgery alone by excising the diseased area, including 3 or more centimeters of the normal tissue. The exception to this rule is the basal cell growth (rodent ulcer) about the face, which is normally considered radio-sensitive and is cured by x-ray treatment with a minimum degree of cicatrix. Another lesion, grade I or 2, of rather frequent occurrence is the malignancy of the cervix uteri in which the patient fails to report for examination early and there is an infiltration of the lesion into the surrounding tissues of the cervix, in which radio therapy offers the best results; and finally in the malignant bone lesions where radio therapy, alone or in combination with surgery, offers the best results.

For lesions of grade 3 or 4, when the lesion is resectable, a combination of radiation and surgery is the treatment of choice, thus removing the diseased tissue, covering the defect with a skin graft, and after the graft is firm employing deep x-ray therapy. A striking example of this kind is the fungating breast cancer.

Radio therapy is a highly specialized field and will always remain a valuable adjunct to surgery in the control of cancer; at least it is the best agent we know to-day. The technician should be trained in the basic principles for its proper application. It is my conviction that the average surgeon, unless he has had training in radio therapy, should refer his malignant cases for radio therapy to the group or clinic doing this type treatment. And too, the complications that follow x-ray and radium treatment, such as skin burns and fistulae of the rectum and bladder, will be reduced to a minimum.

In conclusion, it is my opinion that the maximum result in radiology in the treatment of malignant lesions is based on a tripod of close association of the surgeon, pathologist and radiologist.

JOURNAL ABSTRACTS

Peptic Ulcer—More and more medicine, as a whole, is taking seriously its responsibility in matters of mental hygiene, child guidance, and similar efforts directed toward teaching people how to adjust themselves to the complexities of the world around them. It is too early to see clearly the results of these endeavors, but certainly they are steps in the right direction. It is not too much to hope that as these procedures advance they may act to curb the rising curve of ulcer incidence. Without a doubt psychotherapy and skilled psychiatric assistance offer much that is constructive to the rank and file of ulcer patients. The leading of a well-ordered life, reduced in its excesses and consequent frustrations, with common sense rules of work, recreation and rest mean as much, if not more, in the treatment of ulcer than do the diets and drugs employed. It is not enough to say to the distraught patient "Take it easy, old man," or "Stop worrying." It must be carefully explained to him in understandable terms how much he can accomplish by adopting a normal psychologic outlook, adjusting his conflicts, and living sanely. The results are oftentimes amazingly satisfactory.

The purely medical phase of ulcer treatment is simple in its concept. It consists of a bland diet, fed six or more times daily; the addition of enough alkali, preferably one that is non-absorbable, to reasonably well control gastric acidity; the use of antispasmodics, such as belladonna, novatropine, syntropan, and transentin, and the judicious administration of sedatives—bromides and barbiturates—at times of stress and only when definitely indicated. The correction of the catharsis-enema habit, present in so many patients, is just as necessary for the establishment of a comfortable digestion in those with an ulcer as it is where none exists.

In its practical application it is essential that the treatment be highly individualized. The specific and varying needs of each patient must be carefully sought out, and the plan of treatment made to fit the particular requirements. Rule of thumb methods will not do. For example, the amount of alkali adequate for one case will be insufficient for another; the use of sedatives and antispasmodics is not routinely indicated, but they may be indispensable to the successful management of certain difficult cases, and before some patients can be controlled a two or three weeks period of hospitalization may be necessary, while many may be successfully carried on an ambulatory schedule.

I believe that 80 per cent or more of peptic ulcer patients can be satisfactorily maintained on medical treatment. Those who cannot be controlled on it or those that have certain complications may be relieved by surgical procedures. The indications for surgical treatment are: (1) perforation; (2) repeated hemorrhages; (3) suspicion of malignancy which applies only to gastric ulcers; (4) pyloric obstruction of high grade; and (5) intractability. In other words, the conservative attitude is that surgery is best reserved for the complicated cases or those resistant to a well conducted medical regimen conscientiously followed. A paramount consideration in ulcer therapy should include the cognizance on the part of both physicians and patients that ulcer is a chronic disease, and that the certain penalty of defection in treatment is relapse. The result of an inadequately conceived and imperfectly executed plan of therapy does not constitute intractability; it is either ignorance or neglect, or both. —*Stone, Texas State J. Med., Feb.* '45.

Pneumothorax—It is a well-known fact that the advent of collapse therapy in its various forms has revolutionized the treatment of pulmonary tuberculosis. The development of this form of treatment properly belongs to this century, for it was not until 1895 that Forlanini reported his first case of pulmonary tuberculosis with cavitation successfully treated by this method. The method of progress has been a remarkable one for a scant forty years. It is a fact, not sufficiently appreciated either by medical men or the public, that collapse therapy by means of pneumothorax, operation on the phrenic nerve, thoracoplasty and pneumolysis, have probably done more for suffering humanity in the way of prolonging life and restoring innumerable men and women to health and efficiency who were previously doomed to death or a life of invalidism than most of the other modern medical discoveries combined. By far the vast majority of patients with pulmonary phthisis are fit candidates for some form of collapse therapy at one time or another in the course of their disease. Since we are dealing with artificial pneumothorax in this paper, we are primarily interested in the number of cases suitable for this form of therapy. Taking an average of reports from various parts of the country this figure, according to Packard, Hayes and Blanchet, is somewhere in the neighborhood of 40 per cent—a vast number to be considered for one procedure.

The most common indications are progressive disease usually with cavitation, stationary or very slowly progressive cases, profuse or recurrent hemoptysis and fulminating types of pulmonary tuberculosis.

Following the induction of artificial pneumothorax, the maintenance of a satisfactory and effective collapse, the prevention and management of complications and the decision as to when the pneumothorax should be terminated are matters which may tax the judgment and ingenuity of the physician. The latter subject has been adequately covered in another paper and will not be mentioned here.—*Walker, Virginia M. Monthly, Feb.* '45.

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1945 SESSION CANCELLED

The 1945 Session of the Medical Association of the State of Alabama scheduled to meet in Birmingham April 17, 18 and 19 has been cancelled. This action on the part of the Association's Board of Censors is taken voluntarily in order to cooperate to the fullest extent with the request of the Office of Defense Transportation and in the interest of the nation's war effort.

DON'T NEGLECT CANCER

Contributed by
Clarence C. Little, S. D.
Managing Director
American Cancer Society

Never before have we been so aware of the life saving power of scientific research. Out of the laboratories and on to the firing line where millions of our young men are risking their lives, have gone sulfa drugs, penicillin, dried blood plasma. From the past we can take the names of killers conquered by science—yellow fever, smallpox, diphtheria, typhoid.

Today research against cancer stands on the threshold of new and great advances. It has already given us ways of producing and of controlling the production of the disease in laboratory animals. It has begun to give us knowledge of how cancer cells differ from normal cells.

But cancer research needs financial support and more trained workers. It must be given the material aid and security to make it efficient and increasingly powerful.

Never before have we understood so well how to organize for the detection of precancerous conditions or to identify cancer in its early and curable stages.

Few as yet realize the nature of the emergency which cancer presents. There are 17,000,000 living Americans who will die of cancer unless something is done. There are at least 5,500,000 of them who can be saved from death from cancer by simple, direct means.

You who read this are one of the "means" by which these lives can be saved. Learn the danger signals that may mean cancer and the ways in which the risk of cancer may be decreased. Pass this information on to others. Enlist during April in the Field Army of the American Cancer Society. If one of the danger signals appears either in your own life or in that of a friend insist on prompt fearless action. Go to your doctor for examination and advice.

Education alone can save millions of lives even if research does not advance. No one can afford to be too busy to neglect this challenge. It is a choice between intelligent protection of yourself and those you love on the one hand, and ignorant risk of health, happiness and perhaps life itself, on the other.

The American Cancer Society has been for over 30 years the one great national organization devoted to study and development of plans for cancer control. It stands firmly on three fronts where it is face to face with the enemy—research, service, education. It is going forward in support of all of these fields. It is going to take with it millions of Americans, who realize the great need and their power to help.

The American Cancer Society may have a division of its Field Army near where you live. If so go to it for free information. If it is difficult or impossible to reach a local division, write to the American Cancer Society, Empire State Building, New York 1, N. Y.

TREATMENT OF ROCKY MOUNTAIN SPOTTED FEVER

"Supportive therapy has not been as effectively used in Rocky Mountain spotted fever as it might be. Several misconceptions, including the idea that intravenous fluids are harmful, have been allowed to remain unchallenged in the literature. Specific therapy with hyperimmune antiserum is not widely used as yet and is usually given too late to be of greatest benefit. Before its efficacy can be evaluated, basic supportive therapy must be better standardized. The usual treatment of the disease consists in general supportive measures and the relief of symptoms."

The above is the initial paragraph of the recently published article by Harrell, Venning and Wolff[1] dealing with this disease. The authors, from the Bowman Gray School of Medicine, tell us in their conclusion, that "rickettsial spotted fever is a severe systemic disease. It is rarely diagnosed until the skin rash has appeared. No specific therapeutic agent is available which is effective after the third day of the rash; hence therapy must be largely supportive."

"Regulation of supportive therapy, based on the pathologic physiology of the disease, has not been attempted. Because of the vascular lesions the loss of circulating body fluids, particularly protein, is analogous to that in burns, and peripheral circulatory collapse may develop if inadequate or improper treatment is given. The administration of saline solution or glucose without blood or plasma will aggravate rather than correct the abnormal physiology by washing out further protein."

"Intravenous therapy, properly chosen, is not harmful, as it has been reported to be, but may prove life saving. It should include plasma and whole blood in adequate quantities in addition to glucose, salts, vitamins and amino acids. Careful laboratory control in choosing the type and quantity of parenteral or oral fluids to be administered is important."

"The elevation of the blood nonprotein nitrogen and lowering of blood chlorides are connectable."

"Edema of the subcutaneous tissues and lungs can be produced by excessive administration of crystalloids. The increase in water binding power of the circulating fluid, produced by the administration of blood and plasma, pulls water out of the interstitial spaces and reduces the edema. The peripheral circulation can be supported and the blood pressure raised from shock levels."

"The serum proteins are reduced; nitrogen excretion studies suggest that protein destruction is great. The impairment of liver function makes protein replacement therapy necessary for variable lengths of time."

So long as Rocky Mountain spotted fever was found in only certain parts of the Rocky Mountains it was a matter of little concern to physicians in Alabama and adjoining states. But for some years this dread disease has shown a tendency to spread and for at least three years it has been recognized in North Carolina. We in this section have seen Brill's disease appear among us and slowly move north. We watched the eastward migration of tularemia from California. And we read much about undulant fever in the midwest before it became prevalent in the deep South. And, while it is to be hoped that Rocky Mountain spotted fever will not become epidemic or endemic in this region, we can have no positive assurance that such will be the case. Therefore it behooves practitioners to keep this truly dangerous disease in mind and to keep themselves informed in regard to its diagnosis and treatment, even though there appears to be considerable disagreement at present as to what constitutes proper treatment.

1. Harrell, George T.; Venning, William, and Wolff, William A.: The Treatment of Rocky Mountain Spotted Fever, J. A. M. A. 126: 929 (Dec. 9) 1944.

Tumors of the Testis—The preoperative diagnosis of malignant tumors of the testis is often impossible. We believe that aspiration biopsy is uncertain and that diagnostic palpation of the tumor should be done as gently as possible.

The diagnostic value of the Ascheim-Zondek test is limited. A positive test may be the only evidence of the disease; on the other hand, a negative test does not rule out malignancy.

The value of preoperative x-ray treatment has not been established and the effect of postoperative radiation, while definite, is not sensational.

The most important factor in determining the prognosis is the absence or presence of metastases at the time of orchidectomy. As long as the tumor is confined to the testis itself, there is an excellent chance of complete cure and the life of the patient depends on the prompt diagnosis and treatment of the first physician who sees him.—*Hellwig, J. Kansas M. Soc., February* '45.

STATE DEPARTMENT OF HEALTH

BUREAU OF ADMINISTRATION

B. F. Austin, M. D.
State Health Officer

TUBERCULOSIS IN THE HOME

The State Department of Health recently received from the National Tuberculosis Association a leaflet containing on its front page a picture of three persons: a physician, a nurse and a young man, apparently in his middle-twenties. The physician, in the attire of his profession, was shown shaking hands with the young man. It was not a handshake of greeting but rather of farewell. The picture was made at the entrance to a large tuberculosis sanatorium, and the young man, with his suitcase at his feet, was leaving the institution where he had been taking treatment for one of the most dangerous and fatal diseases known to medical science. Home and resumption of the stern business of earning a livelihood were just around the corner.

That same scene is enacted, except in detail, every day, nay many times every day, in the tuberculosis sanatoria of this and other states. There is a constant stream of men and women, boys and girls, saying farewell to physicians and nurses and starting off to their homes in nearby and distant towns, cities and countrysides. Usually they look well, much better than the average person you see in stores and workshops. To all appearances this great civilian army of the recently institutionalized tuberculous is entirely out of danger. Those who do not know tuberculosis would hardly think of them as being still face to face with perhaps the toughest part of their permanent recovery.

But the medically wise know that this is true. So do hundreds of thousands of persons who have learned to their sorrow what it means to be an actor in a scene like the one just described and also in another kind of scene—a return to the sanatorium after a second breakdown. That latter is not a cheerful scene, like the other one. The physician and nurse are not smiling, because they are full of sympathy, not congratulations. The returning patient is not smiling either, because he knows that in many cases the second breakdown is more serious than the first. He knows, too, what it means to leave family and friends and spend many weary months and perhaps years fighting this vicious, treacherous enemy. This second scene, enacted in Alabama and all over the country much more frequently than the average person has any idea, symbolizes one of the greatest weaknesses of our present-day treatment of the Great White Plague.

This is a problem which concerns many more than the men and women who have to make those dreary, discouraging return trips to tuberculosis sanatoria. Those "many more" extend even far beyond the families of the unfortunate second-timers whose lives are often tragically changed by the financial upsets those second breakdowns usually involve. They include the taxpayers whose public funds meet the cost of the second period of institutional treatment, as well as the first. They include the State's and the nation's public welfare agencies, which are often called upon to relieve cases of acute financial distress due to the illness of the breadwinner. Since that second breakdown is a complicating factor in the whole framework of public and individual health, those "many more" actually include society as a whole.

But society as a whole is not only one of the victims of the tragedy of the second breakdown. It often is also to blame for it. For society often makes it harder for the recently discharged tuberculosis patient to retain the gains he has made and make his recovery "stick." It has the same sort of responsibility for the multiplied thousands of second breakdowns that it has for juvenile delinquency, inadequate educational opportunities, lowering of moral standards and other evils. As in the case of these others, its failure to meet its responsibilities properly is not due to deliberate, or intentional, desire to add to human unhappiness but rather to ignorance and, it must be added, indifference. And, as in the case of those other evils, it deserves only part of the blame. Those most directly concerned—the second-time patients—are also often at

fault. In what proportion the blame should be divided is a matter for determination in individual cases.

One of society's greatest hindrances to the recently discharged patient is the result of its ignorance of the nature of the disease he is fighting. It is fooled by his appearance of completely restored health and assumes that appearance is reality. The added pounds are regarded as evidence that all the damage done by the tubercle bacilli has been undone. The absence of the troublesome cough that was noticeable before sanatorium treatment began is regarded as proof that the condition which caused it has disappeared permanently. There are congratulatory greetings of "How well you look" and "You look better than you did before you became sick." What society does not know, unfortunately, is that added weight, the disappearance of cough, and the general appearance of health are only surface indications. They do not correctly reflect the lung condition. And, while the very fact that the patient is allowed to return home with medical approval is an indication that his lung condition has made progress, it does not mean that the progress made is necessarily permanent or as great as the patient's appearance would indicate. What society often does not know, or forgets, is that it is a practical impossibility to keep the average patient in an institution until his recovery is complete. When he leaves the sanatorium the status of his disease is comparable to that of a fire which has been brought under control but may easily get out of control and do grave damage unless it is carefully watched and proper precautions are taken.

Because of its unfortunate assumption that the home-coming tuberculosis patient is out of danger, society often makes little effort to help him continue the progress he has made. Instead it frequently throws unnecessary difficulties in his way and keeps him constantly fighting an uphill battle against the temptation to do things which his physician has told him he should not do. At the sanatorium, for instance, he was told to spend two hours in bed, without reading or talking, in the early afternoon. But society, as represented by his friends and family, makes it difficult for him to take that afternoon rest by insisting upon his doing other things at that time. He knows, from his sanatorium residence, that he should observe an early bedtime. But society has adopted a late bedtime, and an early-to-bedder feels out of step with the rest of the world. Certain social activities are sternly forbidden by his physician, but they constitute the chief pleasures of those who are well. Is it any wonder that so many ex-patients eventually give up the struggle and begin doing what society does, rather than what they know they should do? And is it any wonder that so many of them find themselves after a while in as serious condition, or even worse condition, than when they discovered they had tuberculosis?

That segment of society consisting of the patient's own family and close circle of friends has a particularly heavy responsibility for his continued improvement and eventful restoration to health. As already pointed out, what others do and say has much to do with his chance of making a good job of getting well. But what his intimates say and do often plays a determining part.

"Whether a patient, after discharge from a tuberculosis sanatorium, continues on the road to health or becomes ill again often depends upon how much understanding and help is given by the family," wrote the anonymous author of the leaflet already referred to. "Many patients are helped by their families to carry through the fight for health and permanent victory. Many others are so hindered that the disease flares up once more, often fatally."

How can the patient's family and friends be of greatest help in that long, often discouraging struggle? How are they most likely to prove a handicap and troublebringer, by acts of both commission and omission?

For one thing, they can, and should, find out all they can about the disease and the manner in which it is treated. If they do that, they will learn what he learned at the sanatorium—that, as already pointed out, a person's appearance is a most unreliable index of the true condition of his lungs. As a tuberculosis authority once wrote, "a pale, thin and apparently fragile patient may have a very fortunate healing condition in the infected lung," while "a plump patient, with rosy cheeks, may face great hazards of

breakdown." The only persons who really know the lung condition are the physicians who have either examined him themselves or have seen and carefully studied the records of his case. That usually means the sanatorium physician and the physician in the patient's home community to whom the case is referred when he is discharged. If the physician currently in charge of the case says it is safe for him to sit up late at night and enjoy certain pleasures, then it is usually safe for him to do so. But if that person advises against these things and orders the patient to observe an early bedtime, get two hours or more of undisturbed bed rest in the early afternoon and avoid forms of activity that appear harmless, then he should do as he is told, regardless of how well he looks or feels. And it is the duty of his friends and family to cooperate with him in doing so, even to the extent of adjusting their own lives to his condition and foregoing some of their own pleasures.

Advice-giving is promoted by the most unselfish of motives, and those who give advice to the sick are as unselfish as any. But their advice is almost always medically unwise and likely to do much harm. The cousin who says she recovered from tuberculosis by taking strenuous physical exercise every day probably did not have tuberculosis at all, and, if she did, taking such violent exercise certainly played no part in her recovery but, instead, jeopardized it. And the aunt who tells about the supposed healing power of a magic medicine bought from an unknown patent medicine peddler is doing the patient a distinct disservice. It is the duty of those who know him best to discourage such talk and strengthen his will not to be influenced by it.

It is now generally agreed that, within certain limitations, good health is purchasable. But the coin it requires is not alone that which comprises our monetary system. It also includes sacrifice, struggle, self-denial and self-control. In the case of complete and permanent recovery from tuberculosis, it often means loneliness, homesickness and discouragement while actively "curing" and a long, difficult and discouraging fight against temptation after the patient returns home. Society and especially his friends and family, who have so much invested in the progress he has already made, owe it to themselves as well as to him to do everything possible to see that he makes a good job of getting well.

BUREAU OF PREVENTABLE DISEASES

D. G. Gill, M. D., Director

Current Morbidity Statistics

1944

	Nov.	Dec.	E. E.* Dec.
Typhoid	4	3	11
Typhus	64	84	38
Malaria	163	177	140
Smallpox	0	1	0
Measles	4	12	28
Scarlet fever	128	114	101
Whooping cough	69	92	76
Diphtheria	125	70	102
Influenza	90	332	532
Mumps	41	127	49
Poliomyelitis	3	3	4
Encephalitis	0	1	1
Chickenpox	60	89	143
Tetanus	6	0	3
Tuberculosis	159	196	218
Pellagra	1	5	10
Meningitis	13	17	6
Pneumonia	188	362	398
Trachoma	0	0	0
Tularemia	0	0	1
Undulant fever	5	8	3
Dengue	0	1	0
Amebic dysentery	21	3	0
Cancer	173	245	0
Rabies—Human cases	0	0	0
Positive animal heads	21	24	

As reported by physicians and including deaths not reported as cases.

*E. E.—The estimated expectancy represents the median incidence of the past nine years.

BUREAU OF SANITATION

T. H. Milford, M. S. in S. E., Director

A WAY OF IMPROVING METHODS AT FOOD ESTABLISHMENTS

Contributed by
B. E. Phillips, B. S.
Senior Sanitarian

It is quite obvious to anyone who has been in close contact with the operation of food-handling establishments since the adoption of the present regulations in 1937 that tremendous progress has been made in securing compliance with the items of Sections 2 and 4 of the regulations. These sections deal with the structure and physical equipment employed in the preparation, display, and service of foods. Section 8 requires that all items of these two sections must be fully complied with before a permit can be issued to or retained by a food establishment operator. The regulations further make it unlawful for any person to operate a food establishment who does not possess an unrevoked permit. Therefore, it is clear that in-

spectors have had a definite criterion by which to be guided in requiring complete compliance with Sections 2 and 4. Nothing concerning these two sections is arbitrary. Nothing is left to one's judgment. No degree of compliance is accepted as satisfactory, except full compliance.

It is also obvious to those who have been in close contact with food control during these several years that we have not made comparable progress in securing compliance with the items of Section 3, this section having to do with methods of operation. It appears to the writer that in many counties the enforcement of Section 3 has been much more lax than is to be desired. This laxness is no doubt due to the fact that too much has been left to arbitration or to one's judgment, and that there has been no definite criterion or standard concerning methods established by most counties. Also, it is no doubt due to some extent to the fact that many inspectors are without definite authority to take positive action until they have consulted with their health officer concerning any given situation.

A number of counties are making commendable progress in securing a more satisfactory degree of compliance with prescribed methods of operation by following a routine procedure similar to the one outlined below:

1. The County Board of Health establishes a minimum satisfactory score. When any establishment's score falls below this minimum, the operator is put on notice that methods must be improved within a specified time to at least the minimum established. If satisfactory improvements are not made in the time specified, the permit is suspended until they are made. At the same time, the County Board of Health establishes a minimum score that will be required of all establishments for continued operation. As an example, the minimum satisfactory score may be set at 85. Any operator whose score falls below 85 is immediately put on notice to improve his score to at least 85 if he expects to continue operation. The minimum score for operation may be set at 75. Any operator whose score falls below this figure is closed at once until satisfactory improvements are made. Sections 3 and 10 of the regulations and the Code of Alabama authorize such action by the County Board of Health. Of course, after such action, every food establishment operator in the county is acquainted of it in writing, and informed that the policies imposed by it will be followed by the health department. Some counties also publish the average of the last three scores of each establishment in local newspapers quarterly.

2. After definite standards have been set up concerning minimum scores, the inspector is given definite instructions by his County Health Officer as to his responsibility, and delegated ample authority to care for same. He may be furnished blank closing notices signed by the health officer to be used when needed without further consultation with his health officer.

It has been observed that when food handlers have been notified of certain definite requirements a majority strive to meet or exceed them. It has also been observed that an inspector without definite instructions and authority is handicapped indeed. An inspector cannot escape responsibility for the sanitary or insanitary condition of the establishments under his supervision. In any workable arrangement responsibility must be counterbalanced with adequate authority. Some one has said that a policeman would be of little value as a law enforcement officer if it were necessary for him to call a meeting of the city council each time he found an offender of the law in order to get authority to make an arrest.

It is not to be construed from the foregoing that the writer is of the opinion that conducting a food program is merely a matter of law enforcement. Education is definitely an important phase of the work, and should always be the essence of the initial approach, but it is contended that education alone will not solve the problem.

Pattern of Growth—That the average stature of university students is greater than that of workmen probably reflects the better early nutrition and more attention to physical development of the former group than any influence of cultural background and environment. The retardation in growth in children from a poverty stricken district, which is greater for lateral than the total body length, can be eliminated by medical and social service supervision if the economic conditions are improved and the residents of such communities educated to the new facilities available to them by the recent advances in medicine. —*Carey, Illinois M. J., Jan.* '45.

BUREAU OF VITAL STATISTICS

Ethel R. Hawley, Acting Director

PROVISIONAL MORTALITY STATISTICS

REPORTED BIRTHS, STILLBIRTHS, DEATHS FROM CERTAIN IMPORTANT CAUSES AND RATES*— NOVEMBER 1944, 1943, 1942

Births, Stillbirths, and Causes of Death	Number of Deaths Registered—Nov. 1944			Rate (Annual Basis)		
	White	Colored	Total	1944	1943	1942
Births, exclusive of stillbirths	**	**	6297	26.5	26.1	26.8
Stillbirths	**	**	192	29.6	27.7	27.4
Deaths, exclusive of stillbirths	1151	944	2095	8.8	9.1	8.5
Infant deaths:						
Under one year	135	127	262	41.6	41.6	42.3
Under one month	89	71	160	25.4	25.1	26.8
Typhoid and paratyphoid, 1, 2					0.4	
Epidemic cerebrospinal meningitis 6	2	3	5	2.1	1.7	1.3
Scarlet fever 8						
Whooping cough 9	2	3	5	2.1	3.4	3.4
Diphtheria 10	11	4	15	6.3	2.5	4.2
Tuberculosis, all forms 13-22	48	56	104	43.8	47.9	36.1
Malaria 28		2	2	0.8	0.8	2.9
Syphilis 30	6	20	26	11.0	15.1	11.8
Influenza 33	12	9	21	8.8	14.7	11.8
Measles 35						
Poliomyelitis 36						0.4
Encephalitis 37		1	1	0.4	0.4	1.3
Typhus fever 39	3	1	4	1.7	1.3	0.4
Cancer, all forms 45-55	126	50	176	74.2	63.9	74.8
Diabetes mellitus 61	17	7	24	10.1	12.2	11.4
Pellagra	1	6	7	3.0	8.0	5.0
Alcoholism 77	2		2	0.8	0.4	0.8
Intracranial lesions 83	112	92	204	86.0	72.7	72.3
Diseases of the heart 90-95	230	160	390	164.4	193.8	161.4
Diseases of the arteries 96-99	20	7	27	11.4	13.9	10.9
Bronchitis 106	4	1	5	2.1	2.1	1.7
Pneumonia, all forms 107-109	55	67	122	51.4	45.4	38.2
Diarrhea and enteritis (under two) 119	11	8	19	8.0	8.8	6.3
Diarrhea and enteritis (two and over) 120	1		1	0.4	0.8	4.2
Appendicitis 121	11	4	15	6.3	5.5	3.4
Hernia, intestinal obstruction 122	9	4	13	5.5	7.6	6.7
Cirrhosis of the liver 124	1	4	5	2.1	2.9	4.2
Nephritis, all forms 130-132	84	82	166	70.0	82.4	70.2
Diseases of the puerperal state 140-150	11	9	20	30.8	42.3	28.9
Puerperal septicema 140, 142a, 147	5	1	6	9.2	15.7	3.0
Suicide 163-164	9	1	10	4.2	5.9	6.7
Homicide 165-168	13	24	37	15.6	11.4	9.2
Accidental deaths (exclusive of motor vehicle) 169, 171-195	81	35	116	48.9	45.8	47.5
Motor vehicle 170	24	13	37	15.6	19.3	24.4
All other known causes	194	136	330	139.1	137.5	140.4
Ill defined and unknown causes 199-200	51	135	186	78.4	68.9	70.6

**Not available.

*Birth and death rates per 1,000 population; infant death rate per 1,000 live births; stillbirths per 1,000 total births (inclusive of stillbirths); from specific causes per 100,000 population; from puerperal causes, per 10,000 total births.

Placenta Previa—Several theories have been offered to explain the cause of placenta previa. It occurs much more frequently in multiparae than in primiparae, and usually in cases with a history of previous infection following labor or other inflammatory changes in the endometrium; or from repeated pregnancies which follow each other in rapid succession. The increased frequency in multiparae (10:1) may be partially due to the fact that among pregnant women multiparae outnumber primiparae by more than 3 to 1.

It is thought that in a low implantation of the placenta, it is possible that the villi frondosa of the chorion, which are in contact with the decidua reflexa, do not atrophy as is generally the case, but for some reason, possibly increased vascularization or extra thickness of the reflexa, they continue to grow. Placental cotyledons are then formed all around the ovum instead of being restricted to the decidua basalis.

As the ovum grows, this placenta-bearing reflexa is gradually forced into contact with the vera on the opposite side of the uterus to which it adheres, forming in effect an extension of the decidua basalis. The villi on the upper aspect of the reflexa now atrophy, leaving a large, broad placenta covering the lower uterine segment, and occluding the internal os. It follows, that the blood supply of such placenta is poor, and that, seeking vascular space for embedding, the villi of the placenta spread out, the end-result being a thin placenta, larger in diameter than the normal. This increase of area tends to cause a portion, at least, of the placenta to occupy the lower uterine segment and even to encroach upon the region of the internal os.

The cardinal symptom of placenta previa is painless, causeless, recurring bleeding in the last half or last trimester of pregnancy. Usually the first hemorrhage is slight, sometimes a mere spotting but may be quite profuse and alarming. Fortunately, the first hemorrhage is seldom fatal and often diminishes to only slight ooze or may stop entirely for a few hours, or even several days. These hemorrhages may occur at irregular intervals, steadily becoming more severe until there is bleeding on any bodily activity whatsoever, or even though the patient be quiescent, there may be sudden, painless, massive hemorrhage.

On account of the importance of this single symptom of painless hemorrhage, every pregnant woman should be advised by her physician to report immediately any bleeding seen during pregnancy, no matter how slight.—*Swanson, Nebraska State M. J., February* '45.

Complying with the request of the Office of Defense Transportation, the 1945 annual session of the Association has been cancelled.

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BACKGROUND

OVER THREE DECADES OF CLINICAL EXPERIENCE

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ACUTE PHARYNGITIS AND TONSILLITIS

TREATMENT WITH SODIUM SULFATHIAZOLE GARGLE, WITH EXPERIMENTAL STUDIES ON THE EXTENT OF ABSORPTION

BERT H. WIESEL, M. D.
Birmingham, Alabama
And
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The toxicity inherent in systemic therapy with the sulfonamides has logically been followed by attempts to overcome this disadvantage through the use of local application of these drugs. Some attention has recently been given to the treatment of inflammation of the upper respiratory tract in this manner. Acute pharyngitis and tonsillitis have been thus treated by means of sprays of sulfonamides in solution or in powdered form, and by other methods of local application.[1] Freis[2] has recently presented statistical evidence that sprays of powdered sulfanilamide or sulfadiazine with hot saline irrigations were more effective in the treatment of acute follicular tonsillitis than saline irrigations alone. Equally good results were obtained with small doses (0.5 Gm.) of sulfadiazine orally every four hours. Blood sulfonamide levels after the powdered sulfonamide spray were said to be never over 1 mg. per hundred cubic centimeters. Although no data were given with reference to the blood levels after oral sulfadiazine therapy, these values probably exceeded 1 mg. %.

No detailed study of the use of a gargle of a sulfonamide solution in this condition has appeared, although there have been incidental references to this means of therapy. Thus Fenton[3] and Gertner[4] recommend, on occa-

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Aided by the University Research Fund. We are obligated to the medical students of the University of Alabama who volunteered as subjects.

The method of S. W. Lee, N. B. Hannay and W. C. Hand (A Rapid and Accurate Micro Method for the Estimation of the Sulfonamides, Science 97: 359, April 16, 1943) was used. It was modified slightly for fingertip blood samples of 0.1 cc.

1. Freeman, M. S.: Local Use of Sulfathiazole Powder for Acute Pharyngeal Infections, Arch. Otolaryng. 37: 496 (Apr.) 1943.

Linton, C. S.: Treatment of Vincent's Angina of the Tonsil. A Preliminary Report, J. A. M. A. 123: 341 (Oct. 9) 1943.

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Bordley, J. E.; Crowe, S. J.; Dolowitz, D. A., and Pickrell, K. L.: Local Use of Sulfonamide Compounds, Gramicidin (Tyrothricin) and Penicillin in Otolaryngology, Arch. Otolaryng. 38: 536 (Nov.) 1943.

Freis.[2] Fenton.[3] Gertner.[4] Arnett, Spink, Boynton and Agnew.[5]

2. Freis, E. D.: Treatment of Tonsillitis with Small Doses of Sulfonamides, J. A. M. A. 126: 93 (Sept. 9) 1944.

3. Fenton, R. A.: Local Use of Sulfathiazole in Otolaryngologic Practice, Arch. Otolaryng. 37: 491 (Apr.) 1943.

4. Gertner, J.: Use of Powdered Sulfathiazole in Nose and Throat, J. A. M. A. 122: 1204 (Aug. 21) 1943.

sions, a gargle of one-quarter cup of water containing one or two 7.7 grain tablets of sulfathiazole. Arnett, Spink, Boynton and Agnew[5] state, without amplification, that disappointing results were obtained with local application of solutions of sulfonamides to the pharynx. In a Current Comment in the Journal of the American Medical Association (May 15, 1943), the following statement was made concerning the local application of sulfathiazole powder to the nasopharynx: "These reports indicate that sulfathiazole may be a practically effective antibacterial agent in nasopharyngeal and probably in other similar infections. There seems to be need for a simple gargle with definite antibacterial powers for popular use."[6] We believe that this need has now been supplied.

CLINICAL PROCEDURES AND OBSERVATIONS

In December 1941, we began prescribing sodium sulfathiazole solution for use as a gargle in acute pharyngitis. The prescription used was a 10 per cent aqueous solution of sodium sulfathiazole sesquihydrate, with directions to the patient to dilute one tablespoonful with an equal part of warm water and use as a gargle every two or three hours. The gargle thus contained approximately a 5 per cent solution of the drug. Since the substance deteriorates on standing, only a small amount was prescribed at one time, and the patients were told that the solution should not be used when it is more than a few days old.

Over 200 cases have been treated in this manner. The first 100 cases consisted almost entirely of adults with mild or moderately severe acute pharyngitis of various causes. The only patients selected were ambulatory, with temperatures under 100 F., whose illness was not considered serious enough to warrant the use of oral sulfonamide therapy. The results have been entirely satisfactory. Recovery seemed more rapid than was expected with the use of conventional methods of treatment. The second 100 cases included acute tonsillitis as well as acute pharyngitis. A rapid diminution of swelling of the tonsil was observed, with early disappearance of exudate, when this was present.

It is obviously difficult to control adequately the results of therapy in patients who have mild, self-limited infections. We believe that the treatment has been of value in relieving the symptoms and in shortening the period of disability. This impression has been confirmed by the request of numerous patients for refills of the prescription when they have been afflicted a second or third time. We feel that this method of treatment offers a considerable improvement over other local measures such as saline gargles and the application of antiseptic dyes.

After this series was completed, a patient suddenly developed a reaction of fever, rash, edema and arthralgia following the use of the gargle for four days. This was interpreted as a drug reaction. It was the only complication or drug sensitization noted. It is of interest that even small doses of sulfathiazole may produce a reaction in susceptible patients.

EXPERIMENTAL STUDIES ON DRUG ABSORPTION

The extent of sulfathiazole absorption in this procedure may be judged from the following experiments. Free blood sulfathiazole levels were determined in normal subjects after administration of 5 per cent sodium sulfathiazole sesquihydrate in various

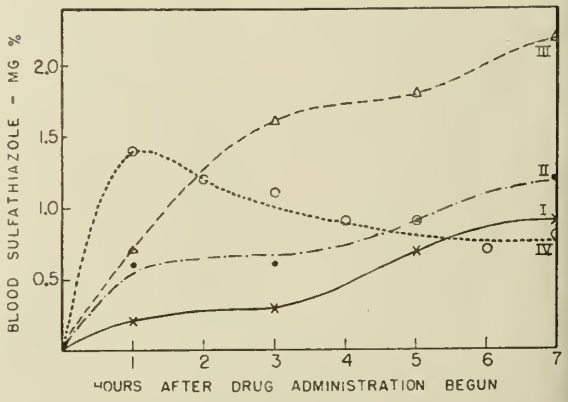

Fig. 1. Average free blood sulfathiazole levels produced by the administration of 5 per cent sodium sulfathiazole sesquihydrate in various ways. Group 1 (solid line), 30 cc. gargled every two hours (thirteen experiments). Group 2 (broken line), 6 cc. taken orally every two hours (four experiments). Group 3 (dashes), 12 cc. taken orally every two hours (two experiments). Group 4 (dots), 15 cc. taken orally once (eight experiments).

5. Arnett, J. H.; Spink, W. W.; Boynton, Ruth, and Agnew, Suzanne: Concentrations of Sulfadiazine in Human Saliva Attained by Chewing Paraffin Containing Sulfadiazine, Proc. Soc. Exper. Biol. & Med. 52: 54 (Jan.) 1943.

6. Current Comment: The Local Use of Sulfathiazole in the Nasopharynx and Larynx, J. A. M. A. 122: 180 (May 15) 1943.

ways. In order to reproduce the clinical conditions, no precautions as to diet or relation of drug administration to meals were taken. The results are summarized in figure 1. A gargle of 30 cc. of the solution every two hours, according to the therapeutic procedure outlined in this paper, resulted in a slight but progressive rise of the blood sulfathiazole level to an average of 0.9 mg. per hundred cubic centimeters in seven hours (group 1). This value is well below the range (4-8 mg.) obtained when adequate oral therapy is given. The other curves in figure 1 indicate the levels expected when proportionate parts of the 30 cc. gargle volume are swallowed. In another series, not shown in figure 1, one gargle of 30 cc. produced a blood level which averaged, at its peak, only 0.5 mg.

A few experiments were performed using dogs in which the sodium sulfathiazole solution was applied to the pharynx every two hours after ligation of the esophagus in the neck. The blood sulfathiazole level remained low, reaching an average of 0.4 mg. in seven hours. The results suggest that absorption through the mucous membrane of this area is very poor; any appreciable rise in the blood level under clinical conditions is probably due to the involuntary swallowing of part of the gargle solution.

These data would seem to indicate that the gargle procedure is accompanied by a minimum of absorption of sulfathiazole and consequently would be expected to produce a minimum of toxic reaction.

COMMENT

The advantages of this method of treatment consist of minimum drug absorption, low toxicity, simplicity and cheapness. There are certain disadvantages. The taste of the solution is disagreeable; a few patients objected strongly to it and were unable to tolerate the regimen. Efforts to avoid this by adding flavoring agents have not been successful. The single case of sulfathiazole sensitivity indicates that a drug reaction can develop in susceptible individuals even with the comparatively small amount of absorption which accompanies the gargle. Finally, it is possible that, if the gargle is used too often, the continuous contact of the solution with the mucous membrane of the pharynx might be injurious. The pH of the normal pharyngeal mucosa varies from 4.9 to 8.0,[7] while a 5 per cent sodium sulfathiazole solution has a pH of 9.5-10.[8] We agree with Fabricant[9] that such alkaline solutions should not be used in the nose, but we do not believe that this solution is too alkaline for use in the pharynx.

SUMMARY

Good results have been obtained in the treatment of mild cases of acute pharyngitis and tonsillitis by a gargle of a 5 per cent solution of sodium sulfathiazole sesquihydrate every two hours. The method is simple, economical, and accompanied by very little absorption of sulfathiazole.

Ruptured Intestines—Severe and very often fatal injury to one or more of the abdominal viscera may result from direct blows or indirectly from explosions in the air or water. A sudden blow on the abdomen from a fist, a block of wood, or abdominal trauma from automobile accidents have resulted in serious and often fatal internal injuries. The numerous reports of people taken out of the wrecks of buildings during the London blitz, in apparently good condition, only to die within a very short time, the fatal results observed in many who received the concussions from depth bombs in the water, have but recently drawn our attention to this form of accident.

As revealed by operations or postmortems, the character and extent of these injuries have been amazing. Livers and spleens have been torn to shreds, the kidneys have been injured beyond repair, the bladder has been ruptured, intestines have been completely severed, the omentum has been torn asunder and blood vessels of various sizes severed. These, of course, represent the extremes of the injuries which are well nigh always fatal. There are other less severe injuries which, after careful and painstaking examination, backed by experience and good sound judgment, may be relieved by operation. Hemorrhage must be differentiated from shock, pain must be properly evaluated, and once the decision has been reached, the surgeon must back his judgment by immediate operation, consistent with sound surgical principles.

Evidences of severe injury are by no means always apparent immediately following the accident. Trauma may result to one or more portions of the gut, producing necrosis and sloughing some days later. Slight injuries to the solid organs may later result in abscesses. These, of course, are dealt with as they become apparent. —*Dodenheimer, New Orleans M. & S. J., March* '45.

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7. Fabricant, N. D.: Introduction to the pH of the Throat, Arch. Otolaryng. 37: 169 (Feb.) 1943.
8. New and Nonofficial Remedies—1944, Chicago, American Medical Association, 1944, p. 202.
9. Fabricant, N. D.: Local Use of Sulfonamides in Nasal and Sinus Infections: An Analytical Review, Am. J. M. Sc. 206: 546 (Oct.) 1943.

TREATMENT OF EXTENSIVE BURNS

WITH REPORT OF CASE

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Among the most pitiable patients seen by the surgeon are those with extensive burns, for a number of reasons. First, few if any surgical cases suffer more pain over a longer period of time than the severely burned individual. Second, in contradistinction to the majority of surgical lesions, particularly of the frequently fatal ones, extensive burns are most often seen in the young individual, with all of life before him or her, rather than in the aged. And third, even if the individual survives the long period of extreme illness and excrutiating pain which is frequently his lot, there is all too often horrible permanent disfigurement, and the mental anguish of anticipating such scarring is added to the patient's other suffering. In view of these things the writer feels that anyone who has anything, however small, to add to the knowledge of the treatment of burns is justified in making that contribution public.

With possible exception of the use of heparin, which the writer has never seen advocated in the treatment of burns, there is no attempt to introduce new factors in burn treatment here. Rather, the object of this paper is to present a system of management for the extensively burned patient, made up of items which are not at all new but the proper correlation of which may not be thoroughly understood. There is first a report of a case in the treatment of which most of the methods here advocated were followed, and a discussion of improvements in treatment gained by a study of this case.

REPORT OF CASE

DFH No. 12,802—M. E. W., a white female, aged fifteen, was admitted to Drummond Fraser Hospital on the morning of Feb. 15, 1944 suffering from second and third degree burns of approximately 95% of the body surface. (Fig. 1) The only areas not so burned were the back of the head and a small area over the upper sternum and right shoulder. These burns were suffered when an open fire ignited the patient's chenille housecoat. (Parenthetically, the proximity of chenille housecoats and open fires should be forbidden by law; few combinations are more dangerous.) She was given morphine sulfate, grains 3/4 on admission. Then a retention catheter was placed on the bladder and the burned areas covered with a single layer of freshly prepared sulfathiazole gauze. Next, a layer of sterilized and well fluffed mechanics' waste about four inches thick was applied, and covered with tight bandaging. Then the entire dressing was covered with waterproof cellophane and again wrapped, as advised by Dr. Neal Owens of the Tulane University of Louisiana School of Medicine, New Orleans. During this period the patient was allowed to drink 1/6 molar sodium R-lactate solution poured over cracked ice in as great quantities as she desired. She was then put to bed on a Bradford frame, and continuous administration of intravenous fluids was begun. (A considerable portion of the fluids was administered intrasternally rather than intravenously, due to the difficulty of locating veins in the burned areas.)

During the first four days plasma was administered in amounts sufficient to keep the hemoglobin concentration in the vicinity of fifteen grams per hundred cc. In addition, during the entire course of treatment, fluids were given in quantities sufficient to maintain a urinary output of approximately 2000 cc. per twenty-four hours. During the early part of the treatment about 20% of this fluid was Ringer's solution, 40% was 5% glucose in distilled water, and 40% was 1/6 molar sodium R-lactate solution. Later, 5% glucose solution was substituted for the sodium lactate. The amounts of plasma given each day may be seen in Table 1. As stated above, during the first four days the attempt was merely to prevent hemoconcentration; thereafter, plasma was administered in amounts sufficient to maintain a serum total protein level of six grams per hundred cc. of blood. Whenever there was a sudden drop in serum protein level with consequent edema forma-

TABLE 1

Hospital Day	Volume of Plasma Administered (CC.)
1	1000
2	500
3	1250
4	550
5	650
6	0
7	650
8	0
9	2300
10	700
11	850
12	0
13	1000
14	1500
15	0

Total volume of plasma administered: 12,450 cc.

Read before the Northeastern Division of the Association, Talladega, December 5, 1944.

From the Department of Surgery of the F. Hood Craddock Memorial Clinic.

Fig. 1—M.E.W. on admission. The burns on the back covered an even larger surface than shown here, but it was not thought advisable to turn this patient for another photograph.

tion and decreased kidney function, commercial dried plasma dissolved in such way as to concentrate it to about twice its original strength was administered. Where this seemed inadequate to reestablish renal function quickly, ten cc. of 25% magnesium sulfate solution, combined with 50 cc. of 50% sucrose solution and administered intravenously, never failed to produce the desired result rapidly.

On the fifth hospital day the patient became semicomatose and irrational; on the ninth day she was again rational, and on the tenth day developed an alkalosis, with alkaline urine and a carbon dioxide combining power of 98 volumes per cent. At this time all administration of sodium lactate was stopped, and ammonium chloride administration by mouth was begun. On the fourteenth hospital day the N. P. N. was 38, the carbon dioxide combining power 50 volumes per cent, the serum total proteins 6.5 gms. per hundred cc., and the chloride 490 mgm. per hundred cc. The urine was normal except for an occasional pus cell. During the entire hospital stay adrenal cortex hormone was administered at the rate of five cc. every six hours, morphine and sodium amytal were given in amounts sufficient to keep the patient comfortable, and oxygen was administered to the patient.

However, in spite of the excellent condition of the patient in every other way, the pulse rate remained rapid, ranging between 115 and 125, and on the thirteenth day reached 130, and remained at or above that level thereafter. In the afternoon of the fifteenth day (March 1, 1944) the patient developed an acute left-sided heart failure, sudden massive pulmonary edema, and within a period of about fifteen minutes expired. When the dressings were removed after death it was found that all of the second degree burns and a large part of the third degree burns had completely healed, with little or no scarring.

COMMENTS

On studying the treatment of this case, it may be seen (Table 1) that after the first four days the rate of administration of plasma averaged approximately 750 cc. per day, or about eight cc. per day per percent of surface burned. This figure is considerably below that recommended in some of the recent literature on the treatment of burns, but was

easily adequate to maintain the serum protein level at or above normal once the initial period had been passed and the serum proteins restored. However, further examination of the table will show that the amount of plasma given in one day varied from none to 2300 cc., with an average deviation from the average amount of 486 cc. We feel that one of the greatest improvements possible in the treatment of this case would have been to administer plasma at a more nearly constant rate, so that sudden alterations in the volume of circulating blood would have been reduced to a minimum, and the blood chemistry maintained more nearly at a normal level. In this connection, it may be stated that on the sixth day 650 cc. of plasma were administered, following which the patient had a serum protein level of 6.8 grams. During the night the infusion needle became clogged and was removed. The patient was taking fluid by mouth, so on the seventh day no attempt was made to restart the infusions, and no plasma was given.

On the evening of the seventh day the serum protein was well above five grams. Therefore, when 650 cc. of plasma given on the eighth day raised the serum protein above six grams again, and the needle was again removed during the night, it was thought safe to wait until the tenth day to start plasma again, since cutting down on a vein through burned tissue is not only very unpleasant and very difficult but extremely painful to the patient. On the morning of the tenth day, however, the serum protein level was 3.8 gms., and large quantities of plasma were necessary to restore it to normal. We believe, therefore, that one should go to any lengths necessary to make possible the constant administration of plasma in the amounts needed. A second probable method of improvement in the treatment of this case would have been the more frequent examination of the blood chemistry. Had this been done, the alkalosis previously mentioned would certainly have been discovered sooner. However, no particular harm is thought to have resulted, and the difficulties of obtaining blood were great. Most of the blood was obtained by jugular puncture through burned tissue, and it was thought advisable to keep such punctures at a minimum. However, we now believe that the advantages outweigh the dangers, and have since insisted on blood chemistry examination at least once daily, and more often if indicated.

The third possibility for improvement was suggested strongly by the method of the patient's death, and it is that the patient might have been digitalized. The overwhelming consensus of opinion in the literature is against the use of digitalis in these cases. However, these patients undergo excessive cardiac strain over a long period of time, and the author is convinced that, where the pulse rate remains very rapid for a period exceeding five days, digitalis, if not imperative, certainly is more likely to help than to harm.

The fourth possible improvement in the method of treatment is one which the author has not seen suggested in the literature on the treatment of burns. It is, however, on two separate counts a thoroughly logical procedure, and has since been employed with gratifying results thus far. It is the administration of heparin during at least the first four or five days. A large number of patients, particularly those with third degree burns, die of thrombosis and embolism, and the administration of heparin should certainly reduce the incidence of these complications. Also, the author has a definite opinion that heparinization reduces the viscosity of the blood, and thus reduces the load on the heart during the early period of the burn, when hemoconcentration is so difficult to combat.

SUMMARY

A case is reported of second and third degree burns of ninety-five percent of the body surface of a patient who survived for fifteen days, and died with normal kidneys and a normal blood chemistry of acute cardiac failure and massive pulmonary edema. The method of treatment used in this case, with improvements suggested by it, are outlined below:

1. Sedation, with morphine in whatever quantities that may be needed.

2. Administration of heparin in amounts sufficient to maintain a venous clotting time of fifteen minutes for the first five days.

3. The administration of 1/6 molar sodium R-lactate solution by mouth and by vein in quantities sufficient to prevent acidosis. (Care is necessary, however, because it is possible to produce severe alkalosis in this way.)

4. Local treatment, consisting of sulfathiazole gauze to the burned areas, covered with a pressure dressing, which is in turn covered with waterproof cellophane. This dressing should be left in place for three weeks.

5. Indwelling catheter connected to a collecting flask for accurate measurement of urinary output.

6. Administration of plasma; during the first forty-eight hours in amounts sufficient to prevent hemoconcentration, then in quantities which will restore and maintain a serum protein level of six grams, given at as nearly as possible a constant rate. This rate will be approximately eight cc. per day for each per cent of the body surface burned.

7. Adrenal cortex hormone in doses of five cc. every six hours.

8. Oxygen as indicated.

9. Blood chemistry examinations daily, and more often if indicated.

10. Intravenous fluids at a constant rate of administration.

a. Five percent glucose solution, 3000 to 4000 cc. per day.

b. Ringer's solution in amounts sufficient to maintain normal electrolyte balance.

c. Sodium lactate solution to replace part of the glucose solution, if necessary to prevent acidosis.

11. Intravenous administration of concentrated plasma if needed to maintain renal function and eliminate edema. This should be supplemented if necessary by administration of sucrose and magnesium sulfate in hypertonic solutions intravenously.

12. Penicillin, where the temperature indicates the probability of infection.

13. Parenteral administration of vitamins, particularly ascorbic acid.

14. Digitalis, if the pulse rate remains over 120 for five days or more.

In conclusion, the author would like to express his appreciation to Dr. Neal Owens and Dr. Samuel Nadler, of New Orleans, who taught him most of what he knows about the treatment of burns, and who were unsparingly generous with advise and encouragement during the treatment of the case presented.

PLANNING FOR MEDICAL CARE IN THE POSTWAR PERIOD

WITH PARTICULAR REFERENCE TO ALABAMA

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IV. RECOMMENDATIONS FOR IMPROVING MEDICAL CARE

Improved medical services could be given the population of Alabama if the following could be accomplished:

1. The provision of an increased number of physicians, nurses, dentists and others engaged in medical services in the rural and certain urban areas in the State.

2. The provision of the necessary hospitals needed in order to make medical care most effective.

3. The provision of the necessary means with which the population could secure the services which the medical profession is in position to provide.

4. The provision of an improved quality of care by the physicians now practicing in Alabama by making available to them postgraduate training of the finest type.

5. The provision of public health services of unexcelled quality.

6. The education of the population regarding matters pertaining to health.

The accomplishment of these objectives "should be effected in such a way as to preserve free choice of doctor or hospital and personal relationships between physicians and their patients, to maintain professional leadership, to ensure adequate remuneration—very probably more nearly adequate than that in customary circumstances—to all practitioners and institutions furnishing medical and health services, and to guarantee the continued independence of nongov-

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The last of three installments. The first and second portions appeared in the February and March numbers.

ernmental hospitals."[19] There are many different methods of reaching these objectives. The proposals outlined are not presented as the only answers and are given merely as an example of steps that may be taken:

1. *Provision of Additional Personnel*: This is probably one of the most important factors which must be considered. In the light of the material previously reviewed, it is obvious that the profession is not in a position to do much about some of the factors responsible. There is little that can be done to increase the per capita income of citizens of Alabama nor can a rural area be changed to an urban area.

There are, however, measures that can be taken. The provision of incentives in the way of funds, medical equipment or office space would attract a limited number of physicians into rural areas. The legislation establishing the medical school has a scholarship provision and these scholarship grants might include a provision that would more or less obligate the recipient to engage in rural practice for at least a few years. In addition to such measures, there is another very logical approach to this problem. The presence or absence of hospitals has been shown to have a definite effect on location of physicians, and, at the present time, this avenue would seem the method of approach most likely to produce results. As provision of hospital facilities is the second of the stated objectives, it should be discussed not only for its own merit but also as a means of reaching the goal of providing a sufficient number of physicians and related personnel, particularly in rural areas.

2. *Provision of Hospital Facilities*: Alabama needs hospital facilities badly, not only to provide the type of care that can be given only in hospitals but also as a means of increasing the number of physicians in rural and certain urban areas.

It is more than likely that in the postwar period a public works program will be initiated by the Federal Government, and this will undoubtedly include funds for hospital construction.[20] Because Alabama's per capita income is below the national level, this type of program will be most helpful and every effort should be made to utilize it to fullest advantage. As matching funds are often required, plans should be made to establish both state and county funds for this purpose. State funds may well be needed to assist some of the poorer counties.

Well equipped rural hospitals should be constructed on the basis of medical need for such facilities and not on the ability of communities to construct and maintain them. They should be so located that most families would not have to travel much in excess of 25 miles to reach them; and they should form a part of a health center to which people would go for other medical care as well as for hospital care.

There should be a master plan for locating these hospitals. Unless this course is followed there will be a tendency to locate them in haphazard fashion, resulting in concentration in urban and wealthy centers with needs in rural and less wealthy areas being neglected. This would not solve the problem and might well accentuate the movement of medical personnel from rural areas. Furthermore, these hospitals should form an integrated system with small hospital-health centers built around larger hospital-health centers which in turn would be related to a large central urban hospital.[21] By this system of organization, the services of specialists can be made available to even the small hospitals. Only in this way can the benefits of modern medicine be made available to the rural areas. This obviously is not possible unless there is a preexisting plan for development on a state level.

It is, therefore, advisable that a survey be made to study available facilities and that a master plan for the future be developed on the basis of this information. In this study the assistance of the State Planning Board, the Alabama Hospital Association, the Alabama State Health Department and other interested agencies should be utilized. The plan developed should be specific and detailed, including tentative layouts for hospitals of various sizes. It is essential that allowance be made for expansion, and that no plans be approved unless they include this feature.

To put such a plan into operation is not feasible unless it is possible to provide the hospitals with sufficient income for opera-

19. Eighth Annual Report, Social Security Board (1943), Washington, D. C., p. 38.

20. Crain, K. C.: Washington Hearings on Hospital Care Have Significant Implications, Hosp. Management 58: 23 (August) 1944.

21. Davis, G. L.: Those Horse-and-Buggy Hospitals Must Go, Mod. Hosp. 62: 50 (March) 1944.

tion. Rural areas at present have such a low per capita income that a large part of support for hospitals must come from other sources. Provision of the means for obtaining hospital and medical services is the next objective to be considered.

3. *Provision of Means for Obtaining Medical Services*: Services provided by hospitals and medical care provided by physicians should probably be considered separately.

(a) Hospital Service: The low hospitalization rate[12] in Alabama is a reflection of the low per capita income. The hospital has certain fixed costs which must be met or it soon fails. For this reason it seems that hospitalization must be subsidized. Hospitalization insurance, while of value, fails to reach those who need it most, and an experience of ten years has demonstrated that it is probably not the final answer, particularly for low income groups. Subsidy can take any one of several forms but the funds therefor should be raised chiefly on a state basis with some local participation. Eventually subsidy for hospitalization on a national basis may be required if the areas needing hospitalization most are to get the help they must have. With a state plan established, there is little danger that a national plan will do more than provide funds for a state administered plan.

Such a subsidy might be restricted to the indigent. This would make it necessary to secure information regarding the financial status of all who applied for aid. It might well be a deterrent to securing adequate care, and develop among the recipients the same philosophy as any type of dole. A far better alternative would be the provision of basic hospital care to all, regardless of income. Under such a system any medically needy person could secure ward accommodations. Those persons of means desiring private or semi-private accommodations would be expected to pay the additional cost. This system would eliminate the need for financial investigations and would have no more pernicious effect on the indigent than our school system has at present. If adequate care is to be provided, the costs will eventually be the same and provision of service to the total population by means of funds raised by taxation would accomplish the objective of distributing the costs of one of the most expensive items of medical care. (See Figures 9 and 11.) The people of Alabama are already spending millions for hospitalization and would merely pay the same bills in a different way.

Details of financing such a program need not be considered here except to suggest the use of an increase of 1 percent in sales tax, coupled with the use of the state income tax (which will soon retire the obligations for which it was originated). Local participation in providing part of such funds is desirable but state participation should provide a sufficiently large proportion to insure local participation over the entire State.

Provision of hospital service by taxation may sound somewhat revolutionary but few persons are aware of the present extent of such support. A study of sources of hospital income made by the U. S. Public Health Service[22] reveals the extent of government support of hospitals. This is shown in Table 1.

TABLE 1

EXTENT OF GOVERNMENT SUPPORT OF HOSPITALS

Type of Hospital	Number of Beds*	Av. Daily Census of Patients	Percent of Income from Specified Source: Patients	Taxes	Other
All hospitals*	1,053,977	850,373	43.1	47.4	9.5
General and special	450,776	288,285	55.6	32.2	12.2
Government	155,386	115,800	13.1	85.4	1.5
Nongovernment	295,390	172,485	73.7	9.5	16.8
Nervous and Mental	532,437	501,796	16.1	81.7	2.2
Government	512,998	487,070	7.5	90.8	1.7
Nongovernment	19,439	14,726	84.3	9.4	6.3
Tuberculosis	70,764	60,292	14.1	78.6	7.3
Government	55,979	50,242	7.1	92.0	.9
Nongovernment	14,785	10,050	42.3	24.9	32.8

*Exclusive of hospital departments of institutions.

Thus, in 1935, about 47 percent of all income of registered hospitals came from state and local taxes and, to a lesser extent, the Federal Government, whereas only 43 percent came from patients. Even in general and special hospitals taxes furnished 32 percent of the income and patients 56 percent. Since 1935 government participation has increased and, although income figures are not

TABLE 2

PERCENT OF GOVERNMENT OPERATED BEDS IN 1935 AND 1942

	1935	1942
General and special	34	48
Nervous and mental	96	97
Tuberculosis	79	84

22. Pennell, E. H.; Mountin, J. W., and Pearson, K.: Business Census of Hospitals, 1935, Supplement No. 154 to Pub. Health Rep., Washington, D. C., p. 22, 1939.

available, the percent of government operated beds in 1935 and 1942 is as shown in Table 2.[23]

Thus, by 1942, it is safe to surmise that as much as 55 percent of the income of all hospitals came from tax funds and perhaps 40 percent from patients. Note that the increase was most marked in general and special hospitals.

Other states have already made plans for state hospital systems, and legislation has already been drafted to put these systems into being. Details of the programs vary but all include state participation to varying extents.[24, 25, 26, 27] It is evident, then that this proposed subsidy plan is not revolutionary. At present a survey of Alabama hospitals would undoubtedly indicate that an appreciable part of the income of general and special hospitals is derived from tax funds.

The administration of hospital funds should be guided by a hospital commission with representation from the State Medical Association, the State Health Department, the State Hospital Association and the State Welfare Department, together with one or two laymen with broad civic interests and legal, financial and administrative background. This commission would be responsible for the establishment of the broad policies of the program. Actual administration would be handled by a qualified administrator and staff. Similar groups on the city and county level would serve to guide the hospital program in the field, and such urban and county groups would be most helpful in making the program fully effective. It is essential that direction be free from political influence and that all positions be awarded on a merit basis.

(b) Medical Care: Unlike the hospital, the physician has some opportunity to vary his fee schedule according to the ability of the patient to pay. The profession has, in general, maintained that through this device it can care for the indigent. Although this may well be true in large centers where clinic care is rendered to indigents, it usually is not true in rural sections. The rural physician in Alabama usually derives a large segment of his practice from a group in the low income and medically indigent class. Although it can pay for normal medical expenses, abnormal or catastrophic expenses frequently are given at a greatly reduced fee or the bills are not paid. Even the middle income groups often have difficulty in meeting the costs of disastrous illness. Could such costs be spread, it would provide better medical care and more adequate income for the physician. Voluntary medical care insurance is one medium by which this spread of cost can be achieved.

Voluntary medical care insurance has demonstrated merit and the principle of voluntary prepayment for medical care is being widely accepted. It is necessary to point out, however, that, despite the merits, it has numerous disadvantages and inadequacies. Thus it fails to provide for the indigent and those in the lowest income groups because of its cost and it thereby fails the primary purpose of giving protection to the people who need it most. Its benefits can be limited to such an extent that costs are not high but in so restricting benefits it fails to achieve its purpose of providing adequate protection. Further, attention is too frequently directed to provision of care after serious illness has occurred rather than to prevention of serious illness. This is particularly true if the coverage is restricted to emergency care in order to reduce costs. Again, participation on a voluntary basis must have certain restrictions to prevent an adverse selection of risk which could easily result in financial failure or an excessively high cost to the subscriber. Also, no provision is usually made for the chronically ill patient. Still further, it is too much to expect that all persons financially able to do so will be provident enough to avail themselves of this type of insurance. Serious and costly illness is not as inevitable as old age or death, yet many individuals of means fail to provide for such contingencies. The human tendency is to "take a chance." It is

23. Need for Medical Care Insurance, Washington, D. C., Bureau of Research and Statistics, Social Security Board, Federal Security Agency, Bureau Memo. No. 57, p. 24, 1944.

24. Arkansas Gets Proposed Act for State Hospitalization Program, Hosp. Management 57: 38 (May) 1944.

25. Crain, K. C.: Maryland Plan for Health Care Offers Model to Other States, Hosp. Management 57: 25 (May) 1944.

26. Georgia Board to Recommend County Hospital Authorities, Hosp. Management 58: 25 (August) 1944.

27. Rhode Island Governor Recommends State Hospitalization Insurance, M. Care 4: 86 (February) 1944.

advisable to keep such facts in mind in advocating voluntary medical care insurance and to plan additional measures which will serve to provide better medical care and more adequate income for the physician. Despite these inadequacies, serious consideration should be given to the inauguration of such a service.

The field of medical care insurance is a large one and it is beyond the scope of this presentation to do more than outline a few general types of plans which have been developed. At the same time, every physician should become acquainted with this field, and a recent study[28] serves as an excellent starting point.

It is extremely difficult to classify medical care insurance plans chiefly because of the countless variations that are to be found among existing plans. This is well expressed by a recent writer[28] attempting such a classification.

"Existing plans defy ready classification for purposes of general analysis. They are non-profit or commercial; they may be sponsored by hospitals, organized doctors, independent doctors, industry, labor, insurance executives, consumers; they may provide medical insurance in the form of cash indemnities or medical services; they may reorganize the system of distributing medical care for their subscribers, or they may work under the existing system; they may insure against one medical need, or several, or all; they may pay for medical services on an annual basis, a service basis, or by the number of persons covered; they may accept subscribers in groups only, or take individuals; they may cover only the employed persons in the family, or they may extend eligibility to include dependents; they may exclude persons over a specified age or income or under an acceptable physical standard. These and countless other variations are to be found among the plans now existing providing endless 'ifs' and 'buts' to any attempt to comparative analysis."

No attempt will be made, therefore, to classify medical insurance plans but mention will be made instead of three general types of plans which differ considerably in their organization and function. These three types are panel plans, group practice plans and commercial indemnity plans.

Panel Plans are those non-profit plans rendering either service or reimbursement through a contract with doctors. There is a wide variety in this group. The term panel refers to the list or group of physicians participating in the plan. These plans, for the most part, cover the abnormal or sudden and overwhelming type of medical expense and do not cover preventive care or the minor medical services. Likewise, the method of obtaining the services involves no change in the prevailing system of medical practice.

Many panel plans were originated by medical societies on a city, county or state basis or were sponsored by such agencies as the Farm Security Administration. A board of directors representing the medical society determines the policies. Usually the board includes certain lay representatives. Membership is open to all licensed physicians and they join by signing contracts agreeing to provide designated services on a co-insurance basis. This means that they help subsidize the plan to the extent that it is unable to meet its obligations to subscribers. For example, a subscriber to the plan will go to a physician for an appendectomy. He is charged the usual fee. He may select a general practitioner or a specialist and the fee may vary. If in the upper income brackets, he may be charged $150 for this service. The plan has agreed to pay the subscriber $75 for this operation, and the difference is the subscriber's own obligation. However, if during the month of the operation, the volume of service covered by the plan is so great that the plan could pay only 80 percent of its obligations, the physician charges the 20 percent off as his contribution to the plan. In this way he is a co-insuror of the plan. If the plan is sound, it will pay nearly 100 percent.

Frequently, low income families are guaranteed complete payment by the plan; that is, the physician members agree to accept the designated fee as total payment. The insurance may be sold only to groups in which a certain percentage must enroll, or it may be sold to individuals. Group enrollment has the advantage of providing better average risk since individuals often subscribe in anticipation of illness. Frequently such plans are administered and subscriptions are sold through existing hospital insurance plans, thus reducing the overhead. A variety of limitations are usually incorporated into the contracts with subscribers. Thus there is generally a ten-month waiting period for maternity cases.

28. Avnet, H. H.: Voluntary Medical Insurance in the United States, Major Trends and Current Problems, New York, N. Y., Medical Administration Service, Inc., 1943.

There are many variations of this general plan but it has the advantage of relatively low cost and serves to protect the subscribers against the heaviest type of medical expenditure. Although present subscribers to such plans are found chiefly in urban centers, the plan is applicable to rural areas, particularly if the state medical association rather than individual county units develops the plan.

Such a plan can be termed an immediate objective and its development need not wait until the postwar period. A study of plans already in operation will make it possible to avoid many of the pitfills which might otherwise be encountered. Many plans have started off with too ambitious a program and subsequently have either had to increase their subscription costs or reduce their benefits. Recognition should also be given to differences in income by provision of a low cost contract to low income families.

In pointing out the advisability of the establishment of such a plan, it is necessary to point out that plans of this type have certain disadvantages. Thus no provision is made for preventive care and for service early in an illness which may make the subsequent care guaranteed under the contract unnecessary. Too often the plans have not improved the quality of medical care. The benefits are in many cases limited to the point where they offer only a partial answer to the problem which they are intended to answer or the cost is too high to interest a sufficiently large group of the population. Finally, lack of adequate support by physicians has hampered many of the plans already in operation.

Group Practice Plans are those in which a group of physicians, usually including a variety of specialists, offer medical care to subscribers on a prepaid basis. Such plans should not be confused with systems of group practice in which care is provided on a fee-for-service basis. The organization sponsored by Henry Kaiser is a well known example of this type although similar plans, such as the Ross-Loos Clinic in Los Angeles and the Stanocola Group in Baton Rouge, have been in operation for a much greater length of time. Physicians in these organizations are reimbursed on a salary basis or are given a definite proportion of the group earnings. In well-operated plans such salaries are adequate, and provision is made for paid vacations and leaves for graduate study. At the same time, the people participating are getting a "good buy" if services afforded are compared to the cost of such service on a fee-for-service basis.

These group practice plans, coupled with a system of prepayment, have a number of advantages over panel plans and over individual practice, some of which are inherent in all group practice plans and others of which derive from the principle of prepayment. Actually the finest examples of group practice are our medical schools. Advantages of group practice with a prepayment feature are as follows:

(1) Better utilization is made of the services of the young physician. Even the well trained specialist often spends many years in practice before he succeeds in securing a sufficient number of patients to utilize his capacities fully. In group practice, his services are utilized to the full almost from the time he enters the group. At the same time, others in the group usually provide a type of assistance and supervision not apt to be found in private practice, thus reducing to a minimum the disadvantages of inexperience.

(2) Consultation is readily accessible and can be utilized without giving the patient the undesirable impression which often arises when a number of individual consultants, each presenting a fee, are called in by the patient's physicians.

(3) The constant and close contact of all members of the group provides for a ready interchange of information which is highly stimulating and serves to keep all members abreast of current medical practice.

(4) Preventive service is emphasized. As the group has a fixed income for which it must provide medical care to all subscribers becoming ill, it is logical and inevitable that efforts are directed primarily to maintenance of health rather than treatment of illness.

(5) There is no costly duplication of much of the equipment needed for modern medical care. The investment of the group in x-ray, laboratory and other physical equipment usually represents a considerably smaller amount per member than the investment of an individual practitioner, or the equipment acquired is of a quality and diversity entirely out of reach of the individual physician.

This principle also applies to the salaries which must be paid to such auxiliary personnel as laboratory technicians, office nurses and receptionists.

These group practice plans are accused of not being in strict accord with the principles of free choice of physician which organized medicine has, in general, approved. However, the group usually includes a number of general practitioners and the individual usually has the privilege of selection from this group. Furthermore, as participation is voluntary, the subscriber has the option of terminating his contract and seeking professional aid elsewhere. Therefore, this objection is not serious or valid and it may be necessary to modify views in regard to it. In a recent radio forum,[29] Dr. Morris Fishbein replied to a question as follows: "I think that you and I agree on the gradual evolution of a high quality of group medical practice."

Despite the favorable features of group practice, both for the physician and the patient, the wide development of such plans in Alabama can hardly be considered an immediate objective. Almost all present plans operate in urban areas where there is a concentration of population adequate to support a sizeable group of physicians. Operation in rural areas would be difficult. Another feature of almost all group plans in operation at present is that the members are largely industrial workers with an income level considerably above that of farm families. Thus the rural character of much of Alabama is an obstacle to the development of group practice plans. On the other hand, the obvious advantages of group practice are probably such that their development should likely be encouraged in urban centers and methods for adapting this type of practice to rural areas should receive study.

Commercial Indemnity Plans provide cash benefits to the subscriber for medical costs which may be incurred. They usually have no direct contact with the physician but are directly liable to the subscriber, and the payment to the doctor is an obligation of the patient.

At present most of these plans underwrite hospital and surgical expense although recently some are providing broader coverage. In general, the subscriber pays a rather high price for the benefits provided.

4. *Provision of Improved Public Health Services*: Despite the excellent work that the State Health Department has been doing, there is still a great deal of room for improvement. Under the present system of financing health department activities, communities that could benefit most from public health activities have the least money to provide these services. Housing is inadequate in many places. Salaries are frequently too low to attract the men of the quality needed. It is a well known fact that the success of a public health program depends to a great extent upon the quality of the personnel engaged in the work. While postwar planning will have to be done largely by the State Health Department itself, it is obvious that it would help a great deal if the funds for public health services were provided chiefly from a state appropriation.

If funds were derived largely from the State instead of from the State and individual counties, the following advantages would accrue:

(a) Funds could be spent on the basis of the need for public health services in any section of the State rather than on the basis of the ability of communities to finance such services.

(b) Public health services could be provided on a district basis rather than on a county basis. For many years the State Health Department struggled to get a health department in every county. This goal was sought since it would mean complete coverage but it is true that too many counties have weak units because funds are so limited that the program provides only partial coverage.

As in medical practice, there are specialists within public health. The Alabama State Health Department has many of these specialists: obstetricians, pediatricians, dentists and psychiatrists, as well as a specially trained staff in charge of the tuberculosis and venereal disease control programs. It is obviously impossible for the average county health officer to be adequately acquainted with all these fields. Were the State divided into districts each including from 250,000 to 500,000 people, such specialists could be assigned to a district and provide adequate consultation service to the local health offi-

29. American Forum of the Air, "Post-War Health Planning" reprinted by Ramsdell, Inc., Washington, D. C., 1943.

cers and to the general practitioners within the area served.

The health departments in most counties are now poorly housed. The State Health Department should make detailed plans for new facilities so that full advantage can be taken of any postwar public works program. In general, health department facilities should be built along with the proposed system of hospitals to form medical centers. A third feature of such a center might well be an office building for physicians with laboratory facilities which might be utilized by all physicians in the community, thus avoiding the costly duplication of diagnostic and therapeutic equipment which is at present found in many Alabama towns and cities.

5. *Provisions of Postgraduate Instruction to Physicians*: This will be a function of the new medical school to a considerable extent. It seems important that such postgraduate instruction be decentralized so that it will be readily available to all practitioners in the State.

As has been said, the State Health Department has a number of specialists in the field of obstetrics, pediatrics, tuberculosis and venereal disease control. These men, by virtue of the fact that their work takes them into every corner of the State, have an excellent opportunity to provide postgraduate training. However, to be of any practical assistance in such a field as obstetrics it is essential that the obstetricians have opportunity to practice their specialty and keep up with current advances in their field. To attain this end there should exist close cooperation between the State Health Department and the medical school, and the consultants of the department should be given opportunity to spend a part of their time in teaching at the medical school and working in the clinics and hospitals of the school. The medical school should also have its staff members spend a certain amount of their time in visiting hospitals throughout the State, conducting clinics and refresher courses. Its functions should be the continuous education of every physician in Alabama, bringing to each practitioner the best in recent medical advances.

6. *Education Regarding Health Matters*: If the benefits of adequate medical care are to be completely realized, it is essential that the public cooperate to the fullest extent. Each person must have sufficient information to be aware of his health problems as well as those of the community, state and nation in which he lives. Only thus will the individual be able to share in their solution.

Much of this health education work falls into the sphere of activity of the health departments, both state and county. Further development through cooperation with the Department of Education is indicated. John W. Studebaker, United States Commissioner of Education, recently reviewing postwar needs,[30] stated: "First, there is need for a more adequate and properly graded program of health instruction in every school in the land. There is particular need for greater stress on this subject matter in the high schools, where students have sufficient maturity to understand the physiologic and scientific background information for healthful living."

It is foolhardy to attempt to provide medical care for illnesses that arise either directly or indirectly from ignorance of adequate nutrition and personal hygiene and from neglect to utilize available preventive measures. The people of Alabama must be educated to live in such a way that illness will be reduced to a minimum. If this can be accomplished, the profession can devote its full time to the care of those conditions which are not now considered preventable and to investigation and research which may well yield methods of preventing these same illnesses in the future.

The inadequate number of dentists and the deplorable conditions revealed by the State Health Department's inspections of school children attest to the fact that the dentists of Alabama are faced with a problem fully as serious as any which face the medical profession. This is a matter of primary concern to the dentists but unless they initiate a program they will probably find that they will have a program thrust upon them. As a matter of fact, such a program was suggested to a U. S. Senate Committee in December 1942.

The need for change in the present system of dental practice is being recognized by

30. Studebaker, J. W.: Planning for Health Education in the War and Post-War Periods—the School Program, Pub. Health Rep. 59: 904 (July 14) 1944.

many of the leading figures in dentistry although there is considerable divergence of opinion as to the changes needed. Dr. John Opie McCall, Director of Guggenheim Dental Clinic in New York has offered a plan[31] in which hygienists and technicians, under professional supervision, would perform many of the dentist's functions and thus would increase the amount of work done per dentist and would greatly reduce the cost of dental care. Another leader[32] deplores this plan, accepts compulsory health insurance as inevitable, and proposes the continuation of present practice with funds derived from such compulsory health insurance. This same writer deplores the lack of any officially sponsored plan by the American Dental Association which could be proposed as an alternative to the so-called Hyser plan.[33]

In any program for improving the health of the citizens of Alabama, dental care should receive attention. The dentists are the logical group to develop such plans and the Postwar Planning Commission of the State Medical Association might well consider the advisability of requesting official appointment of a group of leaders in dentistry to develop plans for improving dental care which could be integrated into a complete health program.

SUMMARY

Medical care legislation is not the cause of present interest in changing the methods of providing such care but is an outgrowth of it. Defeat of such measures will not alter those conditions which are responsible for the support which it is receiving.

There is a rising tide of sentiment in favor of providing the best in medical care to the entire population. Will the medical profession attempt to obstruct such change or will it assume leadership in guiding these changes for the mutual advantage of the public and the profession?

A study of medical care in Alabama reveals circumstances that offer great opportunities for improvement, a situation apparently due to the rural character of large portions of the State, low per capita income and the inadequacies of hospital and public health facilities.

On the basis of the factors responsible for the inadequacies of medical care in Alabama, the following program is suggested for consideration as an immediate objective.

1. Detailed preparation of a master plan of hospital construction for the entire State, based on a survey of the need for such facilities.
2. Legislation providing state funds for maintenance and administration of these hospitals.
3. Development of a plan for voluntary medical care insurance on a state-wide basis.
4. Encouragement of group practice combined with voluntary medical care insurance in those areas in the State where such plans are feasible.
5. Preparation of a plan for construction of health department facilities in conjunction with the hospital system.
6. Legislation providing for the major support of the health departments, both state and local, from state funds.
7. Reorganization of the State Health Department on a district basis in accordance with plans developed by the Department.
8. Close integration of the specialized services of the State Health Department with the new medical school.
9. Emphasis on postgraduate instruction and attention to the problems of the rural practitioner by the medical school.
10. An adequate program of health education by the profession and the State Departments of Health and Education.
11. Federal financial and technical assistance in the construction of hospital and health facilities; administration to remain in the hands of the State.
12. Cooperation with dentistry in attempting to solve the problems of providing dental care.

31. McCall, J. O.: Dental Practice and Dental Education in the Future; with Consideration of Social and Health Aspects, J. Am. Dent. A. 31: 16 (January) 1944.
32. Asgis, A. J.: Post War Implications of the Level-Technician Projects, Tic, August, 1944, p. 6.
33. Strausser, H., and Salzmann, J. A.: Dentistry in the Pepper Committee Report, New York Journal of Dentistry 8: 146 (April) 1943.

Complying with the request of the Office of Defense Transportation, the 1945 annual session of the Association has been cancelled.

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THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

ADOPTED BY THE HOUSE OF DELEGATES, AMERICAN MEDICAL ASSOCIATION, JUNE 13, 1944

1. *Availability of medical care of a high quality to every person in the United States.*

In carrying out this widespread distribution of medical care and in any evolution necessary in the methods of administering medical care, the basic principles necessary to the maintenance of scientific standards and the quality of the service rendered must be maintained.

It is not in the public interest that the removal of economic barriers to medical service should be utilized as a subterfuge to overturn the whole order of medical practice or the democratic plan of government. Removal of economic barriers should be an object in itself.

It is in the public interest that the standards of medical education be constantly raised, that medical research be constantly increased and that graduate and postgraduate medical education be energetically developed. Curative medicine, public health medicine, research medicine and medical education all are indispensable factors in promoting the health, comfort and happiness of the nation.

In carrying out this objective, the American Medical Association advocates:

A. *In the extension of medical services to all people, the utmost utilization of qualified medical and hospital facilities already established.*

There is no evidence that the American people wish different doctors or a different system of medical care. There is evidence that they wish that care more widely distributed and they wish some method of easing its economic burden, especially by prepayment plans. That the people desire a personalization of service is evidenced by the fact that in the present time of full employment the turnover in charity hospitals is at a new low and the semiprivate and private beds in the private and voluntary hospitals are overcrowded, whereas in times of slack employment the reverse is true.

The extension of hospital facilities should be carried out only after a careful survey which indicates that present hospital facilities are being used to the utmost or that there is a definite lack of hospital beds for a particular community.

Again, it has been argued that the demands for medical care in some sections of the country might require the importation of considerable numbers of physicians or the transportation of numbers of physicians in the areas in which they now are to other areas. In this connection it would seem to be obvious that a change in the economic status of the communities concerned would result promptly in the presence of physicians who might be seeking locations. The utilization of existing qualified facilities would be far more economical than any attempt to develop new facilities. There are many emergency situations which may arise in time of war. In most instances these emergencies will not continue after the war. Where they do, other arrangements must be made to meet them.

B. *The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability, including the development and extension of voluntary hospital*

insurance and voluntary medical insurance.

In the United States today our sickness and death rates are lower than those of any other great country in the world. This fact is generally recognized. The medical profession recognizes the importance of doing everything possible to prevent every unnecessary death. At the same time it has not been established by any available evidence that a change in the system of medical practice which would substitute salaried government doctors for the private practitioner subject to the control of public officials would in any way lower sickness and death rates. Compulsory sickness insurance in no instance has given as good a health record as the American system.

The medical profession has approved prepayment plans to cover costs of hospitalization and also prepayment plans on a cash indemnity basis for meeting the costs of medical care. It continues, however, to feel that the development of the private practice of medicine which has taken place in this country has led to higher standards of medical practice and of medical service than are elsewhere and that the maintenance of the quality of the service is fundamental in any health program.

The American Medical Association has approved prepayment hospital insurance subject to the principles adopted by the House of Delegates. The number of people covered by it is constantly increasing. Its availability should be extended to all who desire it.

Medical expense insurance has developed slowly, but much valuable experience has been accumulated. All constituent state associations have been urged to develop voluntary plans within their territory so that the entire country may be covered by such plans. The American Medical Association will assist in the development, correlation and integration of such plans. State welfare departments should consider the use of the insurance principle in caring for the indigent and medically indigent, rather than the present system. Industrial medical care plans on the voluntary principle must be investigated and developed under the guidance of constituent associations and component societies.

C. *Expansion of public health and medical services consistent with the American system of democracy.*

Careful study of the history of the development of medical care in various nations of the world leads to the inevitable conclusion that the introduction of methods such as compulsory sickness insurance, state medicine and similar technics results in a trend toward communism or totalitarianism and away from democracy as the established form of government. The intensification of dependence of the individual on the state for the provision of the necessities of life tends to make the individual more and more the creature of the state rather than to make the state the servant of the citizen. Great leaders of American thought have repeatedly emphasized the fact that liberty is too great a price to pay for security.

D. *The allotment of such funds as the Congress may make available to any state in actual need for the prevention of disease, the promotion of health and the care of the sick on proof of such need.*

The physicians of the United States have given freely of their time and of their funds for the care of the sick. Their contributions to free medical service amounts to at least $1,000,000 a day. The physicians of this country have urged that every person needing medical care be provided with such care. They have urged also the allotment of funds for campaigns against maternal mortality, against venereal disease and for the investigation and control of cancer. The medical profession does not oppose appropriations by Congress of funds for medical purposes. It feels however that, in many instances, states have sought aid and appropriations for such functions without any actual need on the part of the state, in order to secure federal funds as might be available. It has also been impossible, under present technics, to meet actual needs which might exist in certain states with low per capita incomes, with needs far beyond those of wealthier states, in which vast sums are spent.

It is proposed here simply that Congress make available such funds as can be provided for health purposes; that these funds be administered jointly by the county, state and federal health agencies, mentioned in section H of this platform, and that the funds

be allotted to proof of actual need to the federal health agency, when that need is for the prevention of disease, for the promotion of health or for the care of the sick.

E. *The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.*

Obviously if federal funds are made available to the individual states for the purpose mentioned in section D of this platform, there might well be a lessened tendency in many communities to devote the community's funds for the purpose and, in effect, to demand that the federal government take over the problem of the care of the sick. Hence it is suggested that communities do their utmost to meet such needs with funds locally available before bringing their need to the federal health agency, and that the health agency determine whether or not the community has done its utmost to meet such need before allotting federal funds for the purpose.

F. *The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.*

The medical profession wishes to extend preventive medical services to all people within the funds available for such a purpose. Obviously, this will require not only a federal health agency which may make suggestions and initiate plans but also a mechanism in each community for the actual expansion of preventive medical service and for the proper expenditure of funds developed both locally and federally. In the development of new legislation, such mechanism may be suitably outlined.

So far as preventive medicine and general measures of public health are concerned, there is great need for the increase of county or district departments of health. There are still too many areas without such coverage. Every area in the United States should have a health service with adequate personnel and facilities to render the service necessary to each community. It should be integrated with and coordinated by the state health department. Federal funds may be used to help establish these departments where local funds are inadequate, but the management should be under state and local authority.

G. *The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.*

The medical profession does not yield to any other group in this country in its desire to extend medical care to all those unable to provide themselves with medical service. The American Medical Association has already recognized the existence of a group of persons able to provide themselves with the necessities of life commonly recognized as standard in their own communities but not capable of meeting a medical emergency. Hence, it is the platform of the American Medical Association that medical care be provided for the indigent and the medically indigent in every community but that local funds be first utilized and that local agencies determine the nature of the need and control the expenditure of such funds as may be developed either in the community or by federal government, as they are the most capable of determining the needs. Emergency and migratory labor may be a temporary federal responsibility. The use of the voluntary insurance principle should be considered by all agencies distributing medical care.

H. *The establishment of an agency of federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.*

Today the medical and health functions of the United States are divided among a multiplicity of departments, bureaus and federal agencies. Thus, the United States Public Health Service and the Food and Drug Administration are in the Federal Security Agency; the Children's Bureau in the Department of Labor; the Veterans' Administration and many other medical functions are separate bureaus of the government.

Since 1875 the American Medical Association has urged the establishment of a single agency in the federal government under which all such functions could be correlated in the interest of efficiency, the avoidance of duplication and a saving of vast sums of money. Such a federal health agency, with a secretary in the cabinet, or a commission of five or seven members, including compe-

tent physicians, would be able to administer the medical and health affairs of the government with far more efficiency than is now done.

CAUSE OF DEATH IN DIABETES

"A search through the literature for an answer to the question of the causes of death in diabetic patients reveals a large amount of available material, with surprisingly little of it based on pathologic confirmation through autopsy examination. Analyses based on clinical findings alone and on diagnoses found on death certificates are filled with patent inaccuracies. Joslin and others have repeatedly demonstrated that figures gathered from death certificates are subject to so many errors as to vitiate many of the conclusions drawn from them. The example of a cerebral hemorrhage found at autopsy as a cause of death in a case clinically diagnosed as a diabetic coma is a not infrequent occurrence. This report therefore represents an attempt to determine the causes of death in a series of diabetic patients from a strictly anatomic approach. . . . It is believed that such statistical analyses based on anatomic findings give more accurate information regarding causes of death than do analyses based solely on clinical observations."

Thus do Robbins and Tucker[1] open their discussion of this very timely subject. Their report is based upon an analysis of the cause of death in 307 diabetic patients autopsied at the Mallory Institute of Pathology between 1932 and 1942. "For purposes of comparison, the autopsies on approximately 2800 consecutive nondiabetic patients were reviewed for anatomic causes of death."

"Adequate histologic material available in 268 of the patients in the diabetic group was reviewed to evaluate the frequency of histopathologic changes in diabetes." And the diabetics who came to autopsy ranged from thirteen to eighty-four years of age.

The authors tell us that "perhaps worthy of emphasis is the finding of a relatively similar incidence of cerebrovascular accidents as a cause of death in the diabetic and nondiabetic groups—5.2 per cent and 7.5 per cent respectively."

In regard to the current debate as to the relative frequency of carcinoma among diabetics we read that "a point of further interest is that there was a lower incidence of death from carcinoma in the diabetic group (8.4 per cent) than in the control group (14.7 per cent). In view of the close similarity of the survival age in the two groups, age does not seem to aid in accounting for the difference, and at present no other factor appears to be implicated. It is particularly noteworthy in view of the present interest in the relation of cholesterol and of hypercholesterolemic states to the production of neoplasia."

The Boston observers found that coronary occlusion was two and one half times as frequent in the diabetic group as in the control group. And "peripheral vascular disease, although a rarity among nondiabetic patients, accounted for 4.5 per cent of the deaths among diabetic patients, which confirms a well-known fact previously emphasized. A similar situation obtains with reference to infections of the extremities, in which the admonitions of Joslin are borne out by the greater frequency with which this complication leads to death among diabetic patients than among nondiabetic ones. Finally, renal infection, which for many years has been considered a minor complication, is seen to be a relatively important cause of death in the diabetic group. Acute pyelonephritis was four and a half times as frequent a cause of death in the diabetic group as in the control group, and moreover ranks sixth among the causes of death in the former group."

In conclusion the authors tell us that "from the study, several clinical impressions were confirmed. The diabetic patient lives as long as the nondiabetic. There are, however, certain hazards that he is seemingly more likely to encounter, namely, coronary occlusion, peripheral vascular disease, infections of the extremities and acute pyelonephritis."

Robbins and Tucker have covered their subject well and it is through studies such as theirs that our knowledge of diabetes is extended and clarified and, consequently, our efforts to combat it are becoming more effective. Their figures showing that cerebral hemorrhage is but slightly more com-

1. Robbins, Stanley L., and Tucker, Arthur W., Jr.: The Cause of Death in Diabetes, New England J. Med. 231: 865 (Dec. 28) 1944.

mon in the diabetic will probably come as a surprise to many, as most certainly will their demonstration that acute pyelonephritis is four and a half times more prevalent among diabetics. And it will be interesting to learn what subsequent studies reveal as to the incidence of carcinoma among the diabetic.

APRIL ENLISTMENT CAMPAIGN
FIELD ARMY
AMERICAN CANCER SOCIETY

April has been designated by national and state proclamation as the month for inviting the citizens of each state to assist the Field Army in continuing its educational campaign against cancer. It is an annual event, just as The American Red Cross Roll Call, and the drives for other national fundations.

The Field Army has been energetic and successful in its work over our state this past year. Mrs. Ray Meade, of Birmingham, has organized the entire state through captains appointed for each county. Each unit is ready for the campaign in April.

The purpose of raising this fund is to be able to carry the message that cancer has been cured, and can be cured, if detected early, and prompt and effective treatment is immediately begun. Only as each individual is instructed in the earliest manifestations, the signs and symptoms of the disease, will the citizens of our state become cancer-minded. The Field Army's chief objective is to teach these facts, and offer hope to all unfortunate victims of this disease.

The medical profession of Alabama is expected to assist in this campaign by encouraging all those who are actively interested in this work, and also to contribute individually to the cause. Each doctor is asked to become a member of the Field Army in his county. The membership fee is only one dollar, but one need not limit his interest to this small amount. Many doctors and other individuals contribute five or ten, or twenty-five dollars to this agency that is waging a campaign against the second most deadly disease in our country. Nearly 2,000 citizens of Alabama were sacrificed to cancer last year.

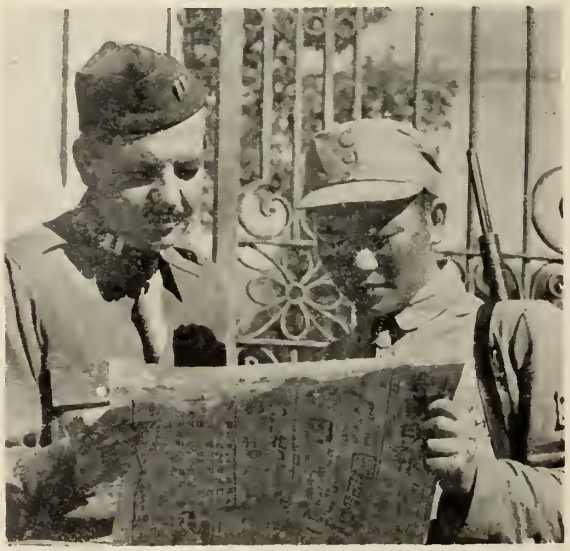
CAPTAIN ARTHUR F. WILKERSON AWARDED BRONZE STAR

Captain Arthur F. Wilkerson of Marion has recently returned from duty as a medical officer with a Y-Force liaison team supporting the Chinese offensive to reopen the Burma Road in Western Yunnan, according to the Public Relations Officer, Y-Force, China Theatre.

When the Chinese Expeditionary Force crossed the Salween River early in May to attack the Japs in their mountain bastions west of the river, each attacking unit was accompanied by Y-Force specialists, technicians and advisors.

Wilkerson was attached to a Chinese division which attacked on May 11 and remained with them until October 31. During this period he walked several hundred miles over the ruggedest terrain in the world—the Kaoli Kung, mountain range spur of the Himalayas.

The campaign was fought among the 12,000-foot peaks of the Kaoli during the mon-



Courtesy, U. S. Army Signal Corps

soon season, when the few trails in this almost trackless wilderness were deep with mud. Narrow and precipitous, each trail became an ordeal to traverse, especially when the altitude became so high that the rains turned to sleet and snow.

Wilkerson and his Y-Force comrades slept in jungle hammocks, frequently within range of Jap fire and always in danger of a night counterattack. They subsisted principally on the Chinese soldiers' diet of rice. The American medical men of Y-Force are credited with saving the lives of more Chinese troops than ever before in the military history of China.

In the virulently endemic malaria region of the Salween River, said by experts to be the worst in the world, American medical precautions prevented the death of an amazing number of soldiers and Chinese military authorities have expressed considerable appreciation for their work in almost eliminating death by malaria which the Chinese had assumed would account for a great number of non-battle casualties during the campaign.

"The medical situation," says Captain Wilkerson, "has been difficult, and carried on under most unusual conditions. Surgery was performed in the open and patients hospitalized in grass shacks. Some Chinese patients are very difficult to treat because they refuse to take drugs, but they like to have medical attention because they are curious about the American physician."

Wilkerson, whose mother, Mrs. Goldsby H. Wilkerson, lives at 442 Washington St., Marion, was graduated from the University of Alabama in 1930 and from the Medical School of the University of Pennsylvania in Philadelphia in 1934.

He is a member of the Junior Chamber of Commerce, the Perry County Medical Society, the Alabama State Medical Association and a Mason.

The captain was called to active duty with the Army in May 1942 and served at Camp Bowie, Texas and Camp Shelby, Miss., before being ordered overseas.

He arrived in India in September 1943 and was flown across the Himalayan "Hump" to join Y-Force, the American military mission which trained, equipped and supplied the Chinese armies for the Salween Campaign, first sustained Chinese offensive in seven years of war against the Jap invaders.

From January until the campaign began in May, Wilkerson was attached to a Chinese division, training Chinese medical personnel on the shores of an historic lake in Yunnan.

For his service in the field with Y-Force, he is entitled to wear a bronze star on his Asiatic Campaign ribbon.

The captain's wife, Mrs. Louise M. Wilkerson, and a son, Arthur F. III, live in Mobile.

WAC MEDICS URGENTLY NEEDED

The wounded—ever more of them—are being returned from our battlefronts. Those who will benefit most by transfer to hospitals in the United States are brought home first. Tens of thousands are waiting for shipment home from both the European and the Pacific theatres though over 1100 are arriving on our home shores daily.

Faced with the fact that even if all nurses were drafted there would not be enough to care for the wounded the Army and the Medical Department have set up a new plan to train assistants for the nurses.

The women who enlist for this service are trained by the Women's Army Corps and the Medical Department of the Army. The course consists of 14½ weeks of intensive training. Four and one-half weeks are devoted to basic training, 6 weeks are spent in a Medical Department Technician School, and the last four weeks are on-the-job training in the hospital of the enlistee's choice.

Under present enlistment privileges women may, singly or in groups, enlist for initial service at a particular Army hospital, with a WAC hospital unit which will, so far as is practicable, be assigned for service within their own states.

In this call for help the Medical Department wants women between the ages of 20-49 inclusive (married or single) with no dependents under 14 years of age. They must have had four years of high school education for enlistment in WAC hospital units.

Women who enlist in these units will, under the supervision of Army officers, perform a variety of duties in Army hospitals. A surgical technician, for example, assists doctors and nurses by preparing the operating room and surgical equipment, and

The WAC Medic Assists the Doctors and Nurses. A U. S. Army photo.

cleaning, washing, and sterilizing instruments. She also helps by performing nonprofessional duties in connection with preoperative and postoperative care in the treatment of surgical cases.

A medical technician keeps records of patients, makes beds, gives baths, prepares dressings, sterilizes dressings and instruments, and keeps progressive ward records.

Other hospital ward duties, including the serving of meals and prescribed liquids to patients, are performed by members of WAC hospital companies. Meticulous records must be kept concerning the patient's medical and surgical treatment, their progress toward recovery, their pay, clothing, and other personal matters of importance to the soldier. WAC technicians are especially trained for these important hospital administrative and clerical duties.

Members of WAC hospital units are paid the same as other soldiers of equivalent grades. Immediately upon successful completion of the 14½ weeks of special training they become Technicians, 5th grade. This grade carries with it a cash salary of $66 a month. There are increases in pay with each advance in rank, the highest grade receiving $138 a month. In addition they are provided with food, clothing, quarters, and medical and dental care. They are also entitled to the same benefits as are other soldiers, including those provided by the G. I. Bill of Rights.

Alabama women are heeding the call to help their wounded brothers. In fact they are enlisting in such proud numbers that Alabama stands fifth in the nation in the percentage of women who will serve their wounded brothers. But men are not wounded on a percentage basis and our Govern-

ment estimates that at least 8,000 women must answer this call to train to help nurse our wounded men.

Doctors know the people in their communities as very few people do. They will be doing their country as well as their communities a real service if they will send the names of eligible women to the State WAC Civilian Committee, Box 196, Montgomery, Alabama.

The Army has a regulation that sources of information are never revealed. So, if a physician hands in the names of eligible women, the women will not know who gave their names unless the physician himself wishes to tell them. The State WAC Civilian Committee will distribute the names to the nearest recruiting office and the women whose names are handed in will be called upon within a week after the name is received.

We earnestly request that the names be sent in promptly.

STATE DEPARTMENT OF HEALTH

BUREAU OF ADMINISTRATION

B. F. Austin, M. D.
State Health Officer

HEALTH WORK IN ALABAMA

The State Health Officer recently received from an official of the U. S. Public Health Service a request for a summary of public health work in Alabama during the two-year period ending last December 31. That summary, the official wrote, is to be used in the preparation of a comprehensive report of public health work in the country as a whole. It occurred to the writer that some of the information furnished the Service should be of interest to the people of this State.

A public health agency has a duty to promote health-improving legislation as well as to enforce such health measures as are already on the statute books. Sometimes, in cooperation with other agencies and individuals and sometimes "on its own," it gives its support to such bills as, in its judgment, are needed. As the Alabama Legislature met in regular session in 1943, the Department's legislative activities and accomplishments during that session properly belong in this discussion.

Probably the most outstanding of the several measures which the State Department of Health was glad to indorse and assist through the Legislature was the Henderson Act, which provides for the compulsory blood-testing of every resident of the State between the ages of 14 and 50, except members of the armed services and a few others. The measure stipulates that the blood-testing must be carried out on a county-by-county basis and makes its enforcement a responsibility of the State Department of Health. The taking of blood samples was completed in six counties—Wilcox, Sumter, Lee, Macon, Russell and Houston—before the first of the year, and at the year's end the results were known for all of these except the last-mentioned (Houston). This forward-looking measure has definitely placed Alabama in the lead among the states in the matter of syphilis diagnosis, and there is every reason to believe that it will influence public health legislation in other states.

Another lengthy forward step taken by the 1943 Legislature was the making available of $30,000 for the 1943-44 fiscal year and $50,000 for the 1944-45 fiscal year for an intensified campaign to curb one of mankind's greatest scourges, cancer. This State was not the first to launch such an intensified campaign against this dread disease, but it is one of a relatively small number of states that have done so. With these funds, the State Department of Health, in cooperation with the Committee on Cancer Control of the Medical Association of the State of Alabama, the Field Army of the American Cancer Society and other cancer-minded organizations, has established six cancer clinics—two each in Birmingham and Montgomery and one each in Selma and Mobile. At each of these clinics, indigent and medically indigent victims of this disease receive free diagnosis and treatment. In order that the whole population of the State may be made more cancer-conscious and freed of much of its old-time misconceptions regard-

ing cancer, a program of cancer education is also being carried on.

A blow for better health in another important field was also struck by a legislative measure providing an increase in the sanatorium subsidy appropriation to permit the State Department of Health to provide more substantial financial assistance to counties maintaining institutions for victims of tuberculosis. Thanks to an increase in the sanatorium subsidy fund voted by the 1943 Legislature, the State Department of Health has been able to pay counties up to one dollar per patient per day. This assistance is believed certain to act as a powerful incentive to other counties to make suitable provision for their tuberculous. The results of this stimulus are not likely to be seen immediately but soon after the war ends and restrictions upon new buildings are removed or drastically eased, it is expected that a number of new sanatoria will be constructed.

The campaign against the Great White Plague was also materially aided by a comprehensive survey of the State's needs in the field of tuberculosis control, which was made by the State Planning Board with the assistance of staff members of the State Department of Health. The needs revealed by this survey were described in a report completed and made available to interested officials and agencies in the fall of 1944. In brief, it recommended that Alabama be divided into seven zones, each embracing from two to 15 counties. It suggested that institutions already in use be retained whenever such continued use would be economically wise and otherwise practicable. The abandonment of others was recommended, especially those of wooden construction and those considered too small for economical operation. Estimating each of those seven zones' needs on the basis of one and one-half beds per annual death, the State Planning Board urged that the needed beds be provided in one or more strategically located sanatoria. Naturally, institutions to be constructed under this plan will receive the same type of financial assistance that the sanatoria already in operation are now receiving, and the amount to be received by each will be determined on the same basis as at present.

The employment of personnel of the State Department of Health has been on a merit basis for more than six years, but the merit system was extended to county public health personnel only within the past two years. After being approved by the State Health Officer and the State Committee of Public Health, the rules and regulations governing this change-over received the approval of the Medical Association of the State of Alabama at its annual meeting in April 1944. All persons, except those in labor or custodial positions, for whom no satisfactory examinations have been devised. were required to qualify for the positions they were holding either by taking examinations or (in the case of those whose qualifications could not be determined by examinations) by furnishing detailed information regarding their training, experience, general ability and character. Similar demonstrations of their qualifications were, and are, required of persons seeking positions in county public health work. The merit system thus set up applies to every county health department in the State except those in Jefferson and Mobile counties, which previously had set up merit systems of their own.

During the two-year period covered by this discussion, facilities were made available for giving eight-weeks rapid treatment for syphilis in nine of Alabama's largest cities (Birmingham, Montgomery, Decatur, Selma, Dothan, Mobile, Tuscaloosa, Gadsden and Anniston). The State Department of Health also cooperated with the U. S. Public Health Service in establishing and operating two rapid treatment centers in Birmingham. Treatment at these centers normally requires only from seven and one half to 25 days to cure suitable cases of syphilis and only 24 hours for the cure of selected cases of gonorrhea.

These treatment centers constituted only a part of this State's constantly moving machinery for the curbing of the venereal diseases. At the end of 1944 there were 196 public health venereal disease diagnostic and treatment clinics in operation in all parts of the State (at least one in every county), all offering their facilities and services entirely without charge to the indigent and medically indigent. The State Health Department also continued—and continues—to furnish free drugs to physicians treat-

ing these diseases in order to keep at a minimum the cost of this treatment to those not wishing to attend the public health clinics.

Another outstanding achievement in venereal disease control was the establishment of a Central Registry for Venereal Disease Cases and Contacts, a joint enterprise of the State Health Department and the U. S. Public Health Service. A well trained field worker makes a careful investigation of every case soon after it is reported, learning the name of the contact, the circumstances under which the disease was contracted, and other details, to be used in bringing the contacts under examination and treatment, when indicated.

Notwithstanding a suspension of several months' duration due to temporary exhaustion of funds, the Emergency Maternity and Infant Care Program, financed by the Federal government and administered by the State Department of Health, issued 9,576 authorizations during 1943 and 1944 for free medical, hospital and nursing care for the wives and babies of service men below the rank of staff sergeant in the Army and of corresponding pay grades in the other branches of the service. This was an average of slightly more than 13 a day, including Sundays, holidays and the time the program was not in operation. Naturally, this two-year average was greatly exceeded in the final months of the biennium. Authorizations issued in November 1944, for example, numbered 681, or an average of nearly 23 a day. Because of the Christmas holidays and other factors, the December average was comparatively low, only about 16 a day.

Naturally, the war, and particularly the presence in Alabama of an unusually large number of military establishments and war industries, caused a marked stepping up of the State Health Department's campaign against malaria, grim enemy of fighting ability and working efficiency. At the end of 1944 its engineers were applying malaria control measures in the vicinity of 32 military and industrial establishments while 52 others were under their supervision. As part of that control, 487 acres of mosquito-breeding water areas were eliminated by filling and construction of drainage ditches. while 172 acres of water surface that could not be drained were treated with larvicidal oil and Paris green. Thanks to these activities and others, the production of the malaria transmitting *Anopheles quadrimaculatus* mosquitoes in the malaria control areas was kept at a safe minimum.

A considerable number of other achievements in public health were recorded during the 1943-44 biennium, more than could be described or evaluated in this article. Notable among them were a marked expansion in the laboratory facilities of the Division of Industrial Hygiene; completion and restoration, under the supervision, and with the approval, of the Department's sanitary engineers, of 15,664 facilities for the sanitary and proper disposal of excreta; a marked expansion of the dental health and nutrition programs; a reduction by more than one-half in the number of endemic typhus fever cases reported from Coffee County, as a result of an intensified rat-eradication program conducted there by the State Department of Health in cooperation with the U. S. Public Health Service and the Coffee County Health Department; and cooperation with the U. S. Public Health Service in the use of 35-mm. x-ray films for the mass examination of war workers for tuberculosis.

This brief reports bears unmistakably the imprint of war. It is sincerely to be hoped that before long the State Department of Health will be able to turn its attention once more to the health problems of a State and nation at peace.

BUREAU OF LABORATORIES

Samuel R. Damon, Ph. D., Director

SPECIMENS EXAMINED

JANUARY 1945

Examination for diphtheria bacilli and Vincent's	614
Agglutination tests (typhoid, Brill's, undulant fever)	575
Typhoid cultures (blood, feces and urine)	592
Examinations for malaria	423
Examinations for intestinal parasites	1,518
Serologic tests for syphilis (blood and spinal fluid)	42,269
Darkfield examinations	42
Examinations for gonococci	3,358
Examinations for tubercle bacilli	1,608
Examinations for Negri bodies (microscopic)	70
Water examinations	1,190
Milk examinations	2,113
Miscellaneous	725
Total	55,097

FEBRUARY 1945	
Examination for diphtheria bacilli and Vincent's	448
Agglutination tests (typhoid, Brill's, undulant fever)	601
Typhoid cultures (blood, feces and urine)	648
Examinations for malaria	435
Examinations for intestinal parasites	1,785
Serologic tests for syphilis (blood and spinal fluid)	29,727
Darkfield examinations	39
Examinations for gonococci	3,020
Examinations for tubercle bacilli	1,371
Examinations for Negri bodies (microscopic)	76
Water examinations	1,052
Milk examinations	1,841
Miscellaneous	952
Total	41,995

BUREAU OF MATERNAL AND CHILD HEALTH

J. S. Hough, M. D., Acting Director

SOME OF THE NEEDS OF THE CHILDREN

A few months ago Miss Katherine Lenroot, Chief of the U. S. Children's Bureau, submitted a statement to the House Committee on Labor's Subcommittee to Investigate Aid to Physically Handicapped in which it was shown that perhaps less than ten percent of the nation's physically handicapped children are being reached through the services developed under the Social Security Program. It was pointed out that there is great need for increased numbers of professional personnel and of hospital facilities.

Care under the State Crippled Children's Services is now limited mainly to those with "visible" handicaps, the orthopedic and the plastic defects, and not all such children needing this care are receiving it. The service is limited by lack of funds, various tests of eligibility, and lack of facilities and personnel.

The number of children needing care are estimated thus:

10,000,000 with refractive defects in vision
4,000,000 with major allergic conditions—hay fever and asthma
2,000,000 with hearing defects
1,000,000 with congenital syphilis
500,000 with rheumatic fever or rheumatic heart disease.
Several hundred thousand, it is estimated, have tuberculosis.

Only nineteen states provide care for children with rheumatic fever and rheumatic heart disease; one state, only, has a medical care program for children with diabetes; and no state provides care for children with refractive defects in vision.

If these services were expanded or more fully developed, many of these handicapped children could be cured or rehabilitated. To meet these needs under the present program of grants-in-aid to the states, more than $20,000,000 would be needed annually. This amount is more than five times that of the present appropriation.

BUREAU OF SANITATION

T. H. Milford, M. S. in S. E., Director

DDT AND MALARIA CONTROL IN ALABAMA

Contributed by
J. L. Crockett, Jr.
Asso. San. and P. H. Eng.

A malaria control program, now in process of organization, will soon be placed in operation in six Alabama counties. In these counties—Autauga, Dallas, Greene, Lowndes, Marengo and Montgomery—approximately 25,000 houses located in the most malarious areas will be treated with DDT residual spray.

DDT (dichloro-diphenyl-trichloroethane) was practically unknown six years ago, although it was first synthesized in 1874. During the past two years extensive experimentation has proven this chemical to possess remarkable insecticidal properties and it has been widely used by the U. S. Army and Navy. DDT is a contact poison and kills insects by derangement of the nervous system. Its effect is not instantaneous as death may not occur until thirty minutes to an hour after the insect first comes in contact with the spray. However, symptoms of DDT poisoning are noticeable five minutes after contact. The phenomenal characteristic of DDT is its residual or lasting effect. It has been demonstrated that flies and mosquitoes resting upon surfaces treated with DDT as long as three months after application of the spray will suffer death.

The DDT residual spraying program is a joint undertaking by the U. S. Public Health

Service and the State and County Health Departments. Personnel for this program will be assigned to the County Health Department under the administrative direction of the County Health Officer. There will be from one to eight three-man crews in each county depending upon the size of area to be treated. Each crew will be assigned specific zones for operation and charged with the responsibility for the spraying of an average of 1,100 houses.

Surfaces on which mosquitoes normally rest or come in contact with will be treated. These consist of the inside walls and ceilings of the house. The rate of application found to be most satisfactory is one quart per 200 square feet of surface area, using hand-operated pressure sprayers. Two gallons of this spray, containing slightly over six and one-half ounces of DDT, will adequately treat the average house. Householders will be notified in advance the date on which their house will be sprayed and requested to remove all furniture to the center of the rooms in order to provide access to the walls. Furniture and similar articles will be covered with cloths by the spraying crew.

The toxicity of DDT to humans has been explored and, as true with the toxic components of commercial insecticides, is harmful if taken orally in sufficient quantities. However, the relatively small amounts used in practical application is no more dangerous than most commonly used house insecticides and less harmful than many.

Autauga, Dallas, Greene, Lowndes, Marengo and Montgomery counties were selected for participation in the DDT program after a thorough study of mortality and morbidity statistics for the past ten years indicated them to be the most malarious counties in the State. The areas within these counties were further delineated by the same procedure and the experience of the State and County Health Departments. The selection of the above counties should not be interpreted in the light that these are the only counties within the State experiencing a malaria problem. Sections of other counties also suffer from malaria but the county-wide problem is not as serious as in those listed above.

The available supply of DDT and other supplies and equipment has necessarily limited the scope of the program for 1945. It is possible, however, that when DDT becomes more plentiful and supplies and equipment are available on a larger scale the work can be expanded to include other areas having a malaria problem.

The success of the DDT program is predicated on the proved fact that DDT spray, possessing residual qualities, will kill mosquitoes, and on the basis that the greater majority of Anopheles quadrimaculatus mosquitoes in becoming infected with malarial parasites will enter houses in doing so. While in the house, the mosquito will at some time, either before or after biting, rest upon the walls or ceilings. If these surfaces have been treated with DDT, the mosquito will be killed and in this way the chain of malaria transmission can be broken. There will be no appreciable difference in numbers of mosquitoes except within the treated house. DDT is a means through which the problem of malaria may be greatly reduced in magnitude.

BUREAU OF PREVENTABLE DISEASES

D. G. Gill, M. D., Director

CURRENT MORBIDITY STATISTICS

	Dec. '44	Jan. '45	E. E.* Jan. '45
Typhoid	3	1	8
Typhus	84	39	21
Malaria	177	118	63
Smallpox	1	2	2
Measles	12	50	218
Scarlet fever	114	98	101
Whooping cough	92	81	118
Diphtheria	70	46	52
Influenza	332	968	1676
Mumps	127	167	123
Poliomyelitis	3	2	3
Encephalitis	1	1	1
Chickenpox	89	143	243
Tetanus	0	3	2
Tuberculosis	196	199	209
Pellagra	5	2	10
Meningitis	17	38	11
Pneumonia	362	391	787
Syphilis	950	731	1042
Chancroid	17	16	9
Gonorrhea	610	570	394
Ophthalmia neonatorum	1	0	1
Trachoma	0	0	0
Tularemia	0	1	2
Undulant fever	8	12	2
Dengue	1	0	0
Amebic dysentery	3	6	0
Cancer	245	178	0
Rabies—Human cases	0	0	0
Positive animal heads	24	3	

As reported by physicians and including deaths not reported as cases.

*E. E.—The estimated expectancy represents the median incidence of the past nine years.

BUREAU OF VITAL STATISTICS

Ethel R. Hawley, Acting Director

PROVISIONAL MORTALITY STATISTICS

REPORTED BIRTHS, STILLBIRTHS, DEATHS FROM CERTAIN IMPORTANT CAUSES AND RATES*— DECEMBER 1944, 1943, 1942

Births, Stillbirths, and Causes of Death	Number of Deaths Registered—Dec. 1944			Rate (Annual Basis)		
	White	Colored	Total	1944	1943	1942
Births, exclusive of stillbirths	**	**	6714	27.4	24.5	28.2
Stillbirths	**	**	180	26.1	30.4	28.1
Deaths, exclusive of stillbirths	1445	1015	2460	10.0	10.2	9.5
Infant deaths:						
Under one year	168	150	318	47.4	45.2	46.8
Under one month	108	84	192	28.6	23.8	28.1
Typhoid and paratyphoid, 1, 2					0.4	0.4
Epidemic cerebrospinal meningitis 6	1	1	2	0.8	2.0	0.8
Scarlet fever 8	1		1	0.4		0.4
Whooping cough 9	2	4	6	2.4	2.0	3.2
Diphtheria 10	7		7	2.8	2.0	1.6
Tuberculosis, all forms 13-22	37	49	86	35.1	35.8	47.6
Malaria 28		1	1	0.4	2.0	2.4
Syphilis 30	8	30	38	15.5	11.8	19.5
Influenza 33	28	25	53	21.6	65.1	19.5
Measles 35					1.6	
Poliomyelitis 36	2	1	3	1.2	0.4	
Encephalitis 37						
Typhus fever 39	3		3	1.2	2.4	2.4
Cancer, all forms 45-55	123	60	183	74.6	64.3	54.9
Diabetes mellitus 61	19	15	34	13.9	10.2	16.3
Pellagra 69	7	7	14	5.7	3.2	4.1
Alcoholism 77	3		3	1.2	0.4	0.8
Intracranial lesions 83	156	107	263	107.3	97.6	79.3
Diseases of the heart 90-95	389	114	503	205.2	189.6	178.5
Diseases of the arteries 96-99	21	8	29	11.8	12.6	13.0
Bronchitis 106	1	2	3	1.2	2.0	1.2
Pneumonia, all forms 107-109	72	99	171	69.8	94.4	67.5
Diarrhea and enteritis (under two) 119	5	8	13	5.3	4.5	3.6
Diarrhea and enteritis (two and over) 120	2	3	5	2.0	0.8	1.6
Appendicitis 121	4	7	11	4.5	5.7	5.3
Hernia, intestinal obstruction 122	6	7	13	5.3	5.7	4.9
Cirrhosis of the liver 124	3	4	7	2.8	6.5	6.5
Nephritis, all forms 130-132	84	99	183	74.6	74.4	69.9
Diseases of the puerperal state 140-150	12	8	20	29.0	40.3	26.6
Puerperal septicemia 140, 142a, 147	6	1	7	10.2	4.8	5.6
Suicide 163-164	7	0	7	2.8	2.4	3.6
Homicide 165-168	14	16	30	12.2	8.1	11.4
Accidental deaths (exclusive of motor vehicle) 169, 171-195	73	42	115	46.9	57.4	62.6
Motor vehicle 170	49	9	58	23.7	19.9	13.8
All other known causes	236	129	365	148.9	138.3	155.3
Ill defined and unknown causes 199-200	71	159	230	93.8	91.1	91.1

**Not available.

*Birth and death rates per 1,000 population; infant death rate per 1,000 live births; stillbirths per 1,000 total births (inclusive of stillbirths); from specific causes per 100,000 population; from puerperal causes, per 10,000 total births.

Rectal Bleeding—Rectal bleeding is one of the common conditions seen in every day medicine, yet which is often underestimated in importance. Frequently this condition persists with neither a careful history nor an adequate physical examination. Such information requires but little effort on the part of the physician and may mean the difference between rapid recovery and a chronic incurable illness.

It is desirable to know if the blood is bright red or dark in color. The bright red blood is usually thought of as coming from the rectum and the sigmoid colon; however, bleeding peptic ulcers in the face of hyperirritability and hyperperistalsis have at times produced a copious amount of bright red rectal bleeding.

The most common cause of the bright red rectal bleeding is internal hemorrhoids; bleeding from this cause occurs as a rule at the end of defecation and may be large in amount. Sometimes a bleeding hemorrhoid may retract up into the rectum and continue to bleed, and the blood will be passed a few hours later as dark clots. There is usually no pain with this type of hemorrhoid.

Frequently the bright red blood may come from an acute or a chronic fissure, and the bleeding will vary from a few drops to a teaspoonful. Often only a pink tinge on the toilet tissue will be noted. This condition very often is mistaken for hemorrhoids or, as the patient describes it, "itching piles." Fissures are quite painful and perhaps bring patients to the physician more frequently than any other rectal disorder. The urge to defecate is present, but the sphincter is spastic and refuses to relax; it is this patient who is constantly taking a laxative or an enema, learning at an early date that a liquid stool is less painful. Fissures untreated over a period of time become chronic ulcers.

Solitary or multiple polyps are often responsible for bright red or dark red bleeding from the rectum. These neoplasms are particularly important from the standpoint of being potentially cancerous, although, as a rule, when malignant degeneration does take place, it usually starts on the tip of the polyp. However, occasionally cancer cells are found at the base. Polyps vary in size from one millimeter to a size sufficiently large to produce intestinal obstruction.

Rectal bleeding in children below the age of 10 is most commonly caused by a low implanted polyp on the posterior rectal wall; this condition is most frequently seen in males. These polyps may prolapse and protrude through the anus; at times they are thought to be hemorrhoids.

Familial multiple polyposis may be present in the large bowel, often thousands of small polyps being present. Usually only one becomes cancerous, but they are all potentially cancerous.

Another cause of rectal bleeding is adenocarcinoma, which certainly occurs often enough to be considered in every case until ruled out. Although not the most frequent, it is the most important cause of rectal bleeding; and one must remember at all times that carcinoma may be present with almost any other rectal lesion. Due to its responsiveness to treatment, an early diagnosis is especially desirable.—*Baldwin, Texas State J. Med., March* 1945.

BOOK ABSTRACTS AND REVIEWS

The Woman Asks the Doctor. By Emil Novak, M. D., F. A. C. S., Honorary D. Sc. (Dublin); Associate in Gynecology, Johns Hopkins Medical School; Gynecologist, Bon Secours and St. Agnes Hospitals, Baltimore. Cloth. Price, $1.50. Pp. 130 with 11 diagrammatic illustrations. Baltimore, Maryland: The Williams & Wilkins Company, 1944.

This monograph represents an attempt by a prominent gynecologist to air out the questions most often asked by women regarding their cyclic phenomena. Throughout the text the author has tried to explode the myths which surround the subject of menstruation, fertility, malignancies, and the menopause. The author joins the increasing group of medical men who are now blaming most of the ills connected with painful menstruation to a psychosomatic basis. The mother who emphasizes the fact that she suffered agonies during her menstrual period is merely fixing the daughter's mind so that she, too, will be a menstrual invalid. The myth that bathing during menstruation is harmful is mentioned for the aid of those who have a hydrophobia during this time. Amenorrhea is discussed from the standpoint that there need not be anything seriously wrong if a woman occasionally misses a period or two. This should help those women who often have all kinds of hysterical tantrums when the flow fails to appear on time. Amenorrhea, however, is often the symptom of a systemic disorder which needs investigation; whereas menorrhagia is most often a symptom of local disturbance. Probably the most frequent questions asked by women are: (1) Why don't I enjoy intercourse? and (2) How can I keep from getting pregnant? Both of these questions are passed up in this book except for the fact that the so-called "safe period" is discussed. This book is well written and is easily interpreted and should fill a definite need. Those women who are thirsty for knowledge about their sex should be able to soak up sufficient material from this book to stimulate further reading on this subject.

P. K. Burwell.

The Marihauna Problem in the City of New York. By the Mayor's Committee on Marihauna. Cloth. Price, $2.50. Pp. 220. Lancaster, Pennsylvania: The Jaques Cattell Press, 1944.

Those who have been frightened by the disturbing reports of marihauna smoking among high school students and its effects upon young America's morals, minds and health should take courage. The danger is much less than they thought.

Acting with characteristic LeGuardian energy and forthrightness, New York's diminutive mayor appointed a committee to study the marihauna problem in his city after hearing and reading much about the widespread use of this drug in the South, particularly New Orleans. The committee moved with almost as much alacrity as the mayor, made a thorough-going study of the problem, with the assistance of the Police Department, educational leaders and others, and made known its findings in a comprehensive report. This is it. And, as indicated, it is calculated to quiet the nerves of those who have become jittery lest the rising generation become a generation of marihauna slaves.

In the first place, marihauna smoking is not as widespread as many people have been led to suspect, at least as far as the committee could find out. And, in the second place, its effects upon those who smoke it are not as harmful as one would judge from marihauna's reputation. There was almost nothing to indicate that marihauna smoking is any more habit-forming than cigarette smoking or indulgence in one's favorite dessert.

Should a study of marihauna smoking be made on a nation-wide scale, it might tell a different story, but apparently what those truth-seekers found out about New York is not essentially different from what would be revealed in a survey of the wider field. Apparently the marihauna smoke has been out of all proportion to the fire, and for that there is great cause for thankfulness.

J. M. G.

The March of Medicine. Lectures to the Laity. Published by the New York Academy of Medicine. Cloth. Price, $1.75. Pp. 112. Morningside Heights, N. Y.: Columbia University Press, 1945.

This small volume contains six lectures that have been presented by way of radio and press releases by the New York Academy of Medicine as an educational program for the laity. The purpose is to acquaint or better correlate the efforts and progress of medicine as it concerns public health and the civilian population.

The subjects deal with wartime information and for that reason are timely. The lecture on Morale and Propaganda is indeed a general discussion of the spirit that motivates people to fight and to sacrifice. The discussion of propaganda is used both for or against a given subject. However, the lecture is strictly nonmedical and could be well presented before any body of lay individuals.

The lecture on Food and Civilization is merely a generalization concerning the requirements of adults under various conditions.

The lecture on Chemotherapy is perhaps one of the best lectures that has been included. It deals with the progress of various medicines that have been used during the past 10 years, particularly those that have been used during the past 5 years and the stimulation that it has produced upon the practice of medicine as well as our ideas of the action of various types of drugs. It is indeed an enlightening discussion which may well be read by every physician, regardless of his specialty. The matter of the use of sulfa drugs and their relation to antibodies and the so-called PAbA, which, in reality, is a substance which inactivates sulfonamide drugs, is well discussed. This group,

namely, para-amino-benzoic acid, is postulated as being an essential food factor for bacterial cells and, therefore, must be knocked out by the sulfonamides in order that the sulfonamide may be bacteriostatic. This apparently is a new idea of the cell and antibody attachments which have been considered for a long time as an explanation of many of the phagocytic mechanisms that one observes in the human body.

Medicine and Change, which is delivered by Reginald Fitz, M. D., is an argument for state controlled medicine, etc., as well as the modification of our present plan of medicine.

The subject of Science and Human Beings, presented by Sir Gerald Campbell as the Williams Memorial Lecture, is purely a philosophic discussion, and the chief criticism is that it contains very long sentences which are complicated and which the reader must read several times in order to make a connected thought. It is in some ways a rambling discussion.

Wars and Epidemics would be of interest to many physicians purely from a historical viewpoint.

The volume in all is pleasant reading. It is only 112 pages in length, of large print, and could be well used by discussion groups of lay individuals who wish to discuss science and medicine. As a reference book for public discussions—that is, where physicians wish to present radio discussions or public speeches, perhaps it will serve as a guide to the type of subject and manner of presentation. For this purpose it is highly recommended.

Norman Van Wezel.

Clinical Heart Disease. By Samuel A. Levine, M. D., F. A. C. P., Assistant Professor of Medicine, Harvard Medical School; Physician, the Peter Bent Brigham Hospital, Boston; Consultant Cardiologist, Newton Hospital; Physician, New England Baptist Hospital, Boston. Third edition, revised and reset. Cloth. Price, $6.00. Pp. 462, with 127 illustrations. Philadelphia & London: W. B. Saunders Company, 1945.

It is indeed an unusual edition that crosses this reviewer's desk that can be read almost at a single sitting. Dr. Samuel A. Levine's Clinical Heart Disease (third edition) is one of those rarities. It maintains its original purpose; namely, to present in a simple discussion the common problems of heart disease as they confront the general practitioner. It is presented in a simple, straightforward manner, omitting all controversial points, as well as presenting all of the known facts in simple, logical manner.

The language of the book is that of a conversation. Dr. Levine writes in the first person. He presents his subject matter as though he were standing alongside the patient and discussing the subject with the reader.

The subject matter is divided into 21 chapters. Each chapter is an entire discussion in itself and may be read independently of the rest of the book. He considers each of the problems, perhaps in the order of their importance. In his part of the country, namely, the East, rheumatic fever is perhaps the most important manifestation of heart disease; Dr. Levine takes it up first. But he does not omit any of the subjects as they are seen in private practice. Of course he does omit the rarities by including only a brief discussion for each of these matters. However, he includes the acute cardiovascular emergencies which in themselves should be read by every physician, practitioner, surgeon and specialist.

His chapter on rheumatic fever is truly an outstanding presentation. He discusses the subject in a commonsense manner, presenting its common features, etiology, treatment and the usual course and complications. In rheumatic fever he discusses the matter of cold shots and vaccinations. It is the growing opinion that they are now worthless and perhaps should be omitted in future editions of this text.

The familial history of rheumatic fever is discussed in quite a great detail. It is, however, placed as a matter of philosophy and conversational reading. It does not attempt to draw any definite conclusions nor present cumbersome statistics. He does discuss merely the growing impression, that Dr. Levine has clinically, of the familial tendency to have rheumatic fever with all its manifestations, joint, skin, brain and heart.

In the discussion of mitral stenosis there may be a difference of opinion. It is the view of most that a mitral stenosis is also a mitral insufficiency. Apparently this is not clearly presented on page 40. However, in later chapters there is the implication that mitral stenosis with insufficiency does occur and is almost synonomous, but on page 40 he states that mitral stenosis without insufficiency is very common. Pathologically this is difficult to understand.

The reviewer is impressed by Dr. Levine's support of Dr. Paul White's contention; namely, that in acute coronary occlusions without evidence of marked myocardial fibrosis, the growing tendency is to allow the patient up sooner and engage in a more normal life than we have been in the practice of doing in the past.

That the text is up to date is evidenced by the fact that under thyroid heart disease is included the most recent drug, thiouracil; and under complications such as acute cardiovascular complications is also included the drug, dicoumarin. These are of very recent origin. He also includes the Smithwick operation of the lumbodorsal sympathectomy for hypertension which, too, is very recent.

For those readers who are of a neurologic trend of mind the discussion concerning the hypothalamic control of emotions, and therefore extra systoles, is of interest and should be read.

More and more in the literature we are noticing reports on the overventilation phenomenon and mild tetany symptoms. Dr. Levine includes this and its manifestations upon the heart.

The one clinical syndrome that every physician sees, namely, heart failure, is discussed adequately, not only in symptoms and pathology but also as regards the practical means of control, including the specific drugs, the dosage, the procedure of administration, etc. The use as well as the abuse of digitalis is well covered in this subject of congestive heart failure.

Almost about half of the book, namely, the last half, deals with clinical electrocardiography. The introduction is concise, simple and very enlight-

ening. He proceeds to discuss electrocardiograms, starting with the most simple abnormality and progressing to the most complex. He presents the electrocardiograms in a logical manner and in a most educational way so that the practitioner gets an excellent concept of the entire subject of electrocardiography. There is practically no phase of electrocardiography omitted. The illustrations are excellently selected and very carefully reproduced.

The subject of electrophonocardiography is illustrated by numerous reproductions. This should prove beneficial to those who have questions as to the timing of murmurs in heart conditions. It should also prove beneficial to those who are hard of hearing and can therefore "see" the murmur rather than hear it.

All in all, Levine's Clinical Heart Disease is a most valuable asset to the library of the general practitioner. It is a most practical review for the specialist. For the teacher of clinical medicine it is indispensable. For the student it will be a helpful edition.

The reviewer heartily recommends the new edition of Clinical Heart Disease to every physician who sees a heart case.

Norman Van Wezel.

AMERICAN MEDICAL ASSOCIATION NEWS

ESTIMATE CONTAMINATED WATER MADE 100,000 ILL IN TWO YEARS

JOURNAL URGES WIDESPREAD READING AND USE OF REPORT BY NATIONAL RESEARCH COUNCIL COMMITTEE ON SANITARY ENGINEERING

Pointing out that at least 100,000 persons have become ill in the past two years because of contaminations of water supply systems, The Journal of the American Medical Association for March 24 says that a report just released by the Committee on Sanitary Engineering of the National Research Council, in which a number of methods for prevention of sewage backflow into potable water lines are given, should be read by every medical officer of health, every sanitary engineer and every waterworks official concerned in this field. The Journal declares that "Many officials even at this late date are not yet aware of the significance of these concealed hazards." The Journal says:

"Sanitary engineering practice has recognized for many years the hazards attached to the current operation of public water supply systems. The design and construction of an integrated public water supply system guarantee only the essentials of good hydraulic and sanitary practice. After the completion of the system, however, many problems arise because of the nature of the liquid handled and of the physical laws governing its distribution. The system operates under varying conditions of starting and stopping and with thousands of exposures through plumbing installations attached for maximum public, private and industrial uses. These innumerable outlets and interconnections are essential not only for potable water use but for many of the sanitary equipments operated in a water carriage system. No matter how well conceived a water supply system may be, physical relation to nonpotable liquids may result from many of the uses in a modern community. Control of these many collateral uses is one of the most difficult functions of public service. Rarely does a comprehensive system prevent or eliminate the many cross and back siphonage connections which are in existence or which may be continually made.

"The Chicago amebic dysentery epidemic in 1933 dramatized the problems attached to the consistent delivery of safe water. This epidemic emphasized the thinness of the dividing line between safety and danger where water supply is exposed to sewage contamination at the points of consumer use. Before and after that nationwide epidemic, sanitary engineers have been confronted with hundreds of epidemics of similar nature. Some indication of the widespread existence of cross connection and back siphonage hazards may be obtained from the accompanying summary of distinct violations of sanitary principles for the protection of water supply lines, as they appear from the records of one large port city. The conditions were found in the 1942-1943 period.

"These conditions can be matched in virtually every city in this country. The cross connections are not usually the result of carelessness or poor design but are generally made for stand-by fire protection, for industrial water use, for pump priming or for auxiliary boiler feed.

"Reports and recommendations on the subject have been prepared by the American

Water Works Association, the New England Water Works Association, the Conference of State Sanitary Engineers and other interested groups. In a comprehensive review of a seven year period ended in 1936 in the United States, Wolman and Gorman state that of 170 reported water borne outbreaks 14 were due to cross connections with a polluted water supply. A preliminary tabulation of disease outbreaks conveyed through water in the United States in 1942, as reported to the U. S. Public Health Service by state and territorial health authorities, indicates that 8 of 50 reported water borne outbreaks were due to cross connections with a polluted water supply.

VIOLATION OF SANITARY PRINCIPLES FOR PROTECTION OF WATER SUPPLY

Number of industrial plants and military establishments	319
Cross connections with nonpotable water supplies	331
Process water connections	2,861
Sewer connections (to water supplies)	627
Back siphonage connections with plumbing systems	6,777
Back siphonage connections (miscellaneous)	3,365
Pierhead connections (unequipped with protective devices)	1,115
Total	15,076

"Although great progress has been made in eliminating cross connections in the past two or more decades, many thousands of them unquestionably have been broken through cooperative action and through passage and enforcement of cross connection regulations. Some of these regulations have been adopted by many states. Numerous local water and health departments (e. g. Los Angeles) have also adopted rules and regulations. Enforcement often falls far behind the establishment of control procedures. State health agencies usually do not have the personnel to carry out the detailed and continuous follow-up necessary. Local water or health agencies may shirk their responsibilities and fail to carry out the necessary detailed surveys and subsequent reappraisals of conditions. Finally, it must be conceded that, even with conscientious attempted supervision, new cross connections or concealed connections may give trouble.

"Back siphonage connections between potable water supply lines and plumbing systems may actually admit sewage to water lines under certain hydraulic conditions. In hospitals, equipment may be used with submerged inlets and connections so installed that infectious or poisonous materials may be back siphoned into the potable water supply pipes. Submerged inlets to factory process tanks holding poisonous solutions may result in contamination of the potable water supply, should back siphonage occur. Opportunities for sabotage may exist because of backflow of dangerous solutions in industrial plants.

"During the war all of these hazards have unquestionably been increased by the large and rapid expansion in industry and in land and sea transportation. Breakdown in supervision by local, state and federal agencies has been too common. Many of the principles and standards regulating practice in this field were being abrogated in one direction or another during wartime. Such accidents became so frequent both on land and on sea that prompt review of the entire situation was essential in order to eliminate the detectable hazards and to prevent future disabilities. With this objective in mind the Committee on Sanitary Engineering of the Division of Medical Sciences, National Research Council, created a Temporary Subcommittee on Cross Connections to review the rules and regulations promulgated by military, semimilitary and civilian agencies to recommend modifications in policies and in practice and to make those conclusions and recommendations available to the country at large for application by military and civilian medical officers of health and engineers. This report has now been released by the Committee on Sanitary Engineering, with the approval of the National Research Council and the Surgeons General of the Army, the Navy and the U. S. Public Health Service. Exact figures of the number of persons made sick or exposed to disease outbreak during the last two years are missing in many instances. A review by the committee, however, indicates that at least some 100,000 persons have become ill.

"One of the special problems to which the committee directs attention is pierhead connections installed to supply vessels with potable water for drinking or for fire fighting. These provide a ready method of polluting the potable water through the use of auxiliary fire pumps for nonpotable water. In one port city the number of these pierhead connections aggregates 15,000, and protective devices were necessary on some 2,500. The report represents a number of methods of prevention of backflow."

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Miscellany

IMPORTANT DRUGS IN 1910-1945 REFLECT PROGRESS IN MEDICINE

The great advancements which medical science has effected in the treatment of disease during the past 35 years are reflected in what physicians consider to be the most important drugs today as compared with those used in 1910, The Journal of the American Medical Association for March 10 points out in an editorial. The Journal says:

"Physicians, listing the ten most important drugs used in medicine in 1910, chose them in the following order: (1) ether, (2) morphine, (3) digitalis, (4) diphtheria antitoxin, (5) smallpox vaccine, (6) iron, (7) quinine, (8) iodine, (9) alcohol, and (10) mercury. Just five years previously the Council on Pharmacy and Chemistry of the American Medical Association had been established to eliminate from medicine the shotgun therapy based on indiscriminate empirical remedies. Out of their efforts came such works as Useful Drugs. The same impetus brought about intensive revision of the United States Pharmacopeia, which today, along with Useful Drugs and New and Nonofficial Remedies, may be said to constitute the proved armamentarium of the physician.

"Tremendous advancement has occurred in the field of therapy since 1910—so great indeed that it is almost impossible to list today ten individual remedies which might be said to be the ten most important or useful in medical practice. In an effort to determine what leaders in medicine might choose as most important in 1945 the editor of The Journal addressed a communication to some of the professors of medicine in leading medical schools. The largest number of replies put penicillin first. In considering penicillin, however, other antibiotic drugs were added. Certainly the sulfonamides come exceedingly close from the point of view of their application under a wide variety of circumstances. At least five of the physicians consulted placed morphine first on the list of important drugs, yet many added to morphine the names of some of the barbituric acid derivatives. Ether still merits a place on any list of important drugs, but today the anesthetist has access to nitrous oxide-oxygen, cyclopropane, ethylene, local anesthesia, spinal anesthesia and continuous caudal anesthesia as well as the basal anesthetics injected directly into the blood. Digitalis still holds a place among the most important of remedies. The diphtheria antitoxin of 1910 is now supplemented by innumerable antitoxins and vaccines established as specific against certain infections. New on the modern list are blood plasma, whole blood for transfusions, gamma globulin and all of the other substances derived from blood. Little was known in 1910 of the products of glands. Today the life-saving properties of insulin, liver extract, estrogenic and male sex hormones, adrenal and thyroid are unquestioned. Little was said in 1910 about vitamins, but the vitamins must be included in any significant list because of their specific virtues in cases of established deficiencies such as rickets, scurvy, pellagra and beriberi. Questionable on any modern list would be the arsphenamines. If penicillin develops as is anticipated in the treatment of

syphilis, the arsphenamines may go far down on any list of important remedies. Since malaria appears to be the most widespread of all diseases on the face of the earth, the quinine of previous generations must be assisted by quinacrine and other specific antimalarial remedies.

"A 1945 list of the most important remedies might be:

"1. Penicillin and the sulfonamides and antibiotics.

"2. Whole blood, blood plasma and blood derivatives.

"3. Quinine and quinacrine.

"4. Ether and other anesthetics, morphine, cocaine and the barbituric acid derivatives.

"5. Digitalis.

"6. Arsphenamines.

"7. Immunizing agents and specific antitoxins and vaccines.

"8. Insulin and liver extract.

"9. Other hormones.

"10. Vitamins.

"Physicians of long experience will arise at once to defend iron, iodine, alcohol, mercury and even aspirin. Actually the choice of the most important remedy depends on the condition with which the physician is confronted. For malaria there is no question about the value of quinine or quinacrine; for asthma, epinephrine or aminophylline would seem most important. For amebic dysentery emetine, chiniofon or carbarsone would be the choice. If the patient just happened to have postprandial indigestion, baking soda might be considered the sovereign remedy. One of the experts put common table salt as number 4 on his list and glucose as number 5.

"So great then has been the advancement of therapy that the choice of the ten most important remedies in medicine would baffle any assemblage of experts. The physical therapists might well question the entire list. The surgeons and authorities in the field of cancer would have ideas seriously varying from those of the internists. All physicians may well take great pride in all that medicine has accomplished in the past quarter century!"

ANTIVIVISECTION OBSTRUCTS SCIENCE

The unsound sentimentalism created by the decision of the parents of a 21 month old daughter, killed by the family's bull terrier, to have the animal killed "serves to reemphasize the difficulties faced by physicians and scientists in attempting to carry out their service to mankind by experiments on animals," The Journal of the American Medical Association for March 10 declares.

The total lack of consideration and the crass indifference toward the grief and bereavement of the parents that was shown by the busybodies who deluged the parents with protests when it was decided to have the dog killed, The Journal says, "is almost unbelievable; yet these are the stuff of which antivivisectionists is made. To them the life of a dog is more important than the life of a child. Their warped mentalities conceive that this dog should be saved and pampered, perhaps to kill another child, certainly to be a constant care, expense and potential menace. The same muddled thinking would deny the use of animals to scientists in the laboratory, preferring that rats, mice, guinea pigs and frogs should live even if the lives of human beings must be lost in consequence. . . ."

JOURNAL DOUBTS THAT DREW PEARSON WILL COMMENT ON SERUTAN CASE

Discussing the recently issued Cease and Desist Order by the Federal Trade Commission against the makers of Serutan, The Journal of the American Medical Association for March 24 says:

"The airing of the decision in the Serutan case may cause many of the public to speculate as to how much they can believe of medical claims made over the radio. Nostrum promotion in newspaper and magazine columns in the past has been flagrant; much of it still is. Over the radio the public today often hears the most preposterous claims in the field of medication, presented by the seductive voices of those who pretend to speak with authority. The owners of Serutan sponsored a widely known newspaper columnist and radio commentator named Drew Pearson. Persons who cherish respectability should be expected to assure themselves of the reliability of their sponsorship, particularly when the health of the people is so directly concerned. Perhaps it would be futile to expect Mr. Pearson to comment on the present state of knowledge regarding his former sponsor on the radio."

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BACKGROUND

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INTRAVENOUS MORPHINE

MAJOR HUGH SMITH

And

MAJOR SEYMOUR SCHOTZ

Maxwell Field, Alabama

Clinical practice and laboratory investigation have long established the opiates, specifically the alkaloid morphine, as the most useful agents for relieving pain. The common practice has been to administer from 1/6th to ½ grain of morphine subcutaneously or intramuscularly in single or divided doses and wait for its effect. More often than not, when the pain has been severe, the anticipated effect from the morphine thus administered has been quite unsatisfactory or, at best, insufficient. Too few men have realized the fact that morphine, like other drugs, may be given intravenously; that since the intravenous route is the most accurate way of specifically determining the requirements of each individual case, this method of giving morphine is both safe and preeminently efficacious even in the rare instances where hypersensitiveness to the drug exists. One of us has helped to conduct a review of the literature and a clinical investigation into the intravenous use of morphine, and in an article in the January issue of *Anesthesiology* presents convincing evidence as to the use of morphine thus administered. When given subcutaneously, morphine reaches its peak of action in from 60 to 90 minutes; intramuscularly, in about 45 minutes; and intravenously, within 5 minutes.

The estimated dose of morphine (from 1/8th to ½ grain) is dissolved in 2 cc. of water, the preparation being the same as if the drug were to be given subcutaneously. A fine hypodermic needle is used. A suitable vein is entered and the injection is begun so as to consume at least two minutes in the administration. After the first drop or two has been given, the operator begins to question the patient as to any side effects such as dizziness, tinnitus, nausea, or a sense of substernal pressure. Should any of these symptoms arise, the injection should be momentarily stopped and then resumed after the symptom has disappeared. This questioning should be repeated at frequent intervals. In several hundred administrations we have never found it necessary to discontinue completely the administration of the drug because of the appearance of any of these side effects. Very frequently in cases where the drug is being given for acute pain, optimum dosage may be obtained by performing the injection very slowly and stopping the injection when the desired analgesic effect has been achieved.

If there is so much instinctive opposition to the use of morphine intravenously that it has not become common practice, one must justify its use. Certain advantages can be anticipated; namely, quicker action, more certain effects, more accurate determination of the proper dosage, and possibly a little prolongation of action. The action of the drug remains the same regardless of the method of administration. These pharmacologic reactions are well known and need no reiteration. There is a great tendency, when a surgeon first begins to use morphine intravenously, to expect it to produce anesthesia and muscular relaxation in a manner

similar to pentothal sodium. At best, morphine is only a basal narcotic agent, an analgesic, and one must not expect more of it because the drug is given intravenously.

It is almost instinctive to think of morphine as an agent capable of dangerous depression of the respiratory center; and one might think that the intravenous route would possibly enhance this action. Such is not the case. In proper dosage no untoward results will occur. We have used intravenous morphine as a preoperative medication prior to the administration of pentothal sodium and repeated the dose intravenously when it was apparent that the pentothal anesthetic requirements were too high; i.e., the patient was using too large an amount of pentothal without the desired anesthetic effect. Certainly, if the combination of these two central nervous system depressants, both given intravenously, does not produce respiratory embarrassment, one need not be too concerned over the so-called hazards of giving morphine intravenously.

The ill-effects attendant upon giving morphine intravenously to an individual who is sensitive or allergic to the drug may haunt one. This factor certainly has been exaggerated. Even should an individual be sensitive to morphine, it will be discovered after the administration of the first few drops. A reaction of severe proportions is less likely to occur under these circumstances than from a large dose injected indiscriminately into the subcutaneous or intramuscular tissues. As an added precaution it is probably wise to use only morphine sulphate tablets that have been in a vial or airtight container.

One soon finds numerous uses for intravenous morphine. From a military standpoint, its greatest use is the relief of pain and the treatment of shock in severely injured individuals. A state of apprehension, fear and pain, is quickly reversed to approach euphoria. With the instant relief of pain, examination can be carried out adequately; the application of splints prior to transportation to a hospital is facilitated. Frequently, in the time interval between accident and the operating room, a patient in pain and shock will have received two or more injections of morphine subcutaneously and still will not have been relieved. Or, if the doses were large and absorption slow, an accumulative effect may eventuate into a very unpleasant complication. Circulation in shocked patients is at a low ebb and, at best, absorption of drugs from the subcutaneous tissues will be slow and uncertain. Intravenous morphine, consequently, is preeminently efficacious in these patients; results are certain and quick, and the possibility of an accumulative effect is eliminated.

The routine use of morphine intravenously, prior to anesthesia, is neither necessary nor desirable. But there are times when it is a valuable adjunct. In patients with excessive hemorrhage, an immediate anesthesia may be essential to securing proper hemostasis; valuable time is saved by administering morphine into the vein. Every surgeon at one time or another has had a patient sent to the operating room without the usual preoperative hypodermic. Rather than delay the operative schedule, intravenous morphine can be given and the patient still have the proper preoperative medication and effect with but little delay. When local anesthetic agents are used, morphine is a nice supplement if introduced into the vein just prior to surgical preparation and draping. Patients under the influence of morphine are considerably more cooperative than under the barbiturates and are not excitable or uncontrollable. Too frequently the injection of local anesthesia is marred by a nervous patient who withdraws the member at each prick of the needle regardless of the care with which the anesthetic is injected. Intravenous morphine will help to preclude such possibilities by producing a maximum and certain effect at the time that it is most needed.

Pain crises of a medical or surgical nature are a common occurrence; for example, kidney or gallbladder colic, coronary occlusion, and a frequent one during respiratory epidemics, pain from precipitation of sulfadiazine crystals into the kidney pelvis. For humanitarian reasons, one likes to relieve pain quickly in these instances, although no life and death emergency may exist. The progressive relief of pain can be followed in the expression of the patient's face as the drug is slowly introduced into the vein. From this and from questioning, the optimum desired effect is determined as the injection proceeds; frequently, the desired result will

be produced with 1/6th grain of morphine in contradistinction to the usual ¼ or ½ grain subcutaneously and the 15 to 30 minute delay while the effects are observed. Intravenous morphine is also a convenient and satisfactory medication prior to changing dressings of extremely painful granulating wounds, removing packs, changing splints on fractured extremities, and for other procedures that ordinarily are carried out on the ward without recourse to anesthesia.

A surgeon is confronted many times with a fracture or dislocation that he does not feel justified in reducing under general anesthesia and perhaps he is not a local anesthesia enthusiast. Morphine, under these conditions, will provide a help for these borderline cases. We have routinely reduced acute dislocations of the phalangeal joints without difficulty. Fractures of the ankle and Colles's fractures, that present little displacement but a moderate degree of angulation, can be reduced satisfactorily without too much pain to the patient. In fractures of the carpal scaphoid, certainly, a general anesthesia is not justified; yet, one frequently has difficulty with an uncooperative individual in getting the wrist into proper position for application of the cast. Briefly, in cases where muscular relaxation is not too necessary, morphine provides a sufficient degree of analgesia to preclude anesthesia. We have reduced successfully quite a number of dislocated shoulders under intravenous morphine without the use of undue force in patients who were in a sufficiently euphoric state to relax their muscles voluntarily. In just about the same number we have been unsuccessful. In the latter group, the intravenous morphine acted as a preoperative medication of sufficient magnitude for minimal quantities of pentothal sodium. Many times the debridement of a burn or a minor laceration may be carried out under intravenous morphine analgesia quite satisfactorily without the need for complete anesthesia.

Because proprietary drugs such as pantopon and dilaudid are not standard items of issue, we have mentioned only the use of morphine intravenously. They can be introduced in the vein just as efficaciously as morphine. Similarly, drugs commonly used with morphine, such as atropine and scopolamine, may be combined with morphine and given intravenously.

We hope that you have not gleaned from this paper the impression that our enthusiasm for intravenous morphine has carried it over into the routine to the abandonment of the subcutaneous and intramuscular routes, for such is not the truth. We, however, have not found any particular contraindications to its intravenous administration. This method of using morphine has apparently found its way to combat areas faster than to the station hospitals. From a recent article by P. B. Ascroft, Major R. A. M. C., we offer the following quotation: "Forward surgery in busy times is a kind of mass production. The numerous maneuvers ancillary to the actual operation must be standardized and as far as possible rendered automatic. The technique of premedication is a good example. A solution of morphia (100 cc. bottles of 2½ percent, 1/3rd grain in 1 cc.) was the sole preparation used. All distractions in the shape of other opium preparations and related sedatives were suppressed. The solution of morphia was always given intravenously in the usual dose of ¼th to 1/3rd grain. The patient is then made comfortable immediately. No untoward effects were observed in several hundred injections. Furthermore, since the full effect develops rapidly, there is no danger of cumulative effects, a hazard not unusual in the presence of shock when absorption from subcutaneous tissue is slow."

In conclusion, we feel that the use of morphine intravenously should be a more commonplace form of therapy; that, while not an absolute necessity, certainly it provides a more efficient way of accomplishing a purpose than present standard procedure; and that with even average precaution there are no deleterious effects that should preclude frequent usage.

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Tuberculosis can destroy the finest human material in every nation. Yet all modern knowledge shows that this disease, if fought with medical and social weapons known to us now, can be cured and largely prevented.—*Harley Williams, M. D., Am. Rev. Tuberc., Jan.* 1945.

FOX RABIES

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Whenever fortuitous circumstances have allowed wild canine species such as the fox or coyote to become abundant in a region where rabies is enzootic in dogs there is a constant threat of a serious epizootic of rabies. During the past few years the gray fox species has become unusually abundant in several of the southern states, and leaders of wild life supervision have warned of the impending danger of epizootic fox rabies.

The damage which such an epizootic can cause is illustrated by the experience in California, Oregon and Nevada during the coyote rabies epizootic of 1915-1916.[1, 2] In the two counties of Modoc and Lassen alone the coyotes were responsible for the death of 1,805 sheep and 2,495 lambs in 1915. The disease spread to polecats, bobcats and mountain lions, so these species had to be included in the hunting and trapping program. During the first seven months 7,162 coyotes, 496 polecats and 430 bobcats were killed and probably an even greater number were poisoned. Before the disease was stamped out it was necessary to kill 89,759 coyotes, bobcats and lions, and 9,424 miscellaneous wild animals.

In 1890, and for several years thereafter, fox rabies was a serious problem in Baldwin and Mobile counties of Alabama.[3] The disease finally killed practically all of these animals in that part of the State. The only other epizootic of fox rabies previously known to have occurred in this country originated near Boston, Massachusetts in 1812.[4] The disease spread rapidly, and large numbers of rabid foxes were noted for several months. Thereafter sporadic cases occurred for a few years and foxes became practically extinct in Massachusetts, indicating that the disease had finally killed the foxes.

During the past seven years fox rabies has been reported in Alabama, Arkansas, California, Georgia, Illinois, Iowa, Indiana, Kansas, Kentucky, Louisiana, New York, Pennsylvania, North Carolina, South Carolina, Ohio, Tennessee, Texas, Virginia, West Virginia and Wisconsin. In certain areas where foxes were unusually abundant, true epizootics of rabies developed. The first of these epizootics originated in Burke County, Georgia in March 1940.[5] Burke county lies on the eastern border of Georgia, midway between the north and south borders. It has long been a favorite fox hunting territory and because of its heavily wooded areas and swamps provides ideal cover for foxes. Fox rabies had been present in South Carolina in enzootic proportions since 1937 and the Burke county outbreak may have been derived from infected foxes entering Georgia from that state. It was known, however, that just prior to the first report of fox rabies in Burke county that a fox hound that was later found to have been in the early stages of rabies was run on a fox hunt where two foxes were bitten and escaped. By July 1940 the disease had spread throughout Burke county and had also appeared in the adjoining counties of Jefferson, Jenkins and Bulloch. Farmers reported that foxes, in increasing numbers, were invading farm yards and attacking farm workers, live stock, poultry and dogs in day time. Late in June, county and state health authorities, aided by the State Veterinarian and both state and federal wild life agencies, began an investigation. A series of conferences led to the adoption of a coordinated rabies control program under the direction of Dr. T. F. Sellers of the Georgia Department of Public Health. The major responsibility for fox control work was assumed by the Division of Predatory and Rodent Control of the U. S. Fish and Wild Life Service, under the direction of Mr. L. C. Whitehead. This agency furnished the services of Mr. Andy Ray,

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agent hunter, and also employed eight local men to aid in trapping and hunting foxes. The Georgia State Wild Life Service assigned a ranger, Mr. Charles Harper, to aid in the fox control program. Dr. J. M. Sutton, State Veterinarian, Georgia State Department of Agriculture, directed the dog rabies control program. A temporary quarantine of dogs was enforced in Burke and Jefferson counties. Stray dogs were destroyed and clinics were arranged so that all other dogs could be vaccinated. By arrangement with local hunters, fox heads were shipped to the Georgia Department of Public Health for diagnosis. Brain and salivary gland specimens from 419 foxes were made available to this laboratory by the Georgia Department of Public Health. A total of 151 foxes proved positive for rabies by animal inoculation. In addition, eight fox heads not submitted for animal test were found positive for rabies by microscopic examination of the brain. Large numbers of foxes were found dead in the woods and fields and many others were killed during the early part of the epizootic and were not examined. The epizootic reached a peak of incidence in August 1940 but continued active until November 1941. As a result of fox bite, thirty persons were given the rabies vaccine treatment without fatality. Many domestic animals died of rabies. A number of wild animals other than foxes were caught and examined. One skunk was found positive for rabies. With the exception of one red fox, all the foxes found positive for rabies were of the gray variety. Though fox rabies spread to include fourteen counties, the epizootic was largely confined to Burke county due to the particular abundance of foxes in that region.

The experience with vaccination of dogs in Burke county proved interesting. A total of 2,900 dogs were vaccinated within a period of three weeks. Four dogs developed rabies after vaccination, all within a period of thirty days. It is probable that these dogs were exposed before vaccination. Fourteen foxes, later proved rabid, were killed by fox hounds during the hunting program. The fox hounds had been vaccinated and none developed rabies. No further cases of rabies have developed among vaccinated dogs in this county. Only two cases of dog rabies have been reported in Burke county since 1941. Neither of these dogs had been vaccinated and both were known to have been brought in from other counties.

In November 1940 fox rabies appeared in Houston county, Alabama. This county is situated in the southeastern corner of the State. The disease spread to Henry and Dale counties and fox rabies was also reported in Early county, Georgia, which lies adjacent to Houston county, Alabama. Eight foxes were found positive for rabies when tested by animal inoculation. Many obviously rabid foxes were killed in farm yards and fields. Livestock losses from rabies were heavy and several persons were bitten by rabid foxes. In September 1941 fox rabies appeared in Miller county, Georgia, just south of Early county. The disease later spread southward into Seminole county. Fox rabies was also present in epizootic proportions in southern Georgia during 1940 and 1941, beginning in Lowndes county in November 1940, later spreading into Brooks, Lanier and Cook counties. The outbreaks of fox rabies in Alabama and southern Georgia developed shortly after the one in Burke county but there is no evidence that they were derived from foxes migrating to these areas. It is more likely that they developed independently as a result of exposure of foxes by stray rabid dogs. There were no known cases of fox rabies in Alabama during the winter of 1941-1942 but the disease remained active in enzootic proportions in southern Georgia.

Fox rabies appeared in the northwestern corner of Georgia in August 1942. The disease soon attained epizootic proportions in Dade and Walker counties. A few cases of fox rabies were reported in De Kalb county, Alabama, which is adjacent to Dade county, Georgia. The disease also spread into southeastern Tennessee. Mr. Hugh Forester, a ranger employed by the Georgia State Wild Life Service, has reported 355 cases of fox rabies and ninety cases of rabies in domestic animals and pets in that area. Only a few fox heads were sent to the Georgia Department of Public Health for diagnosis but in each instance the clinical diagnosis of rabies was confirmed. One skunk and two squirrels were killed when they attacked persons without provocation. Many opossums, without evidence of injury, were found dead in and near their dens, suggesting that they

might have died of rabies. The ranger also reported twenty-five instances where chickens that had been bitten by foxes later developed paralysis and died. The incubation period varied from fifteen to twenty-six days. Since July 1943 there have been only sporadic cases of fox rabies in this area. One case of fox rabies was reported in Cullman county, Alabama during 1944. This county is near the old focus of fox rabies and the occurrence of this case suggests that the disease is still present in wild life in northeastern Alabama.

In October 1942 fox rabies appeared in Mobile county, Alabama. This county is located in the southwestern corner of the State, a region where foxes have been particularly abundant. Rabid foxes were first encountered in the Mt. Vernon area but the disease spread rapidly to the north into Washington county. During the first three months of this epizootic local residents reported 103 cases of fox rabies. Sixty-three domestic animals died of rabies and fifteen persons were bitten by foxes. Rabid foxes invaded school yards and even appeared on the streets of small towns. Local residents carried weapons wherever they went as foxes were apt to come charging from the brush or woods at any time. A large number of foxes were killed by local residents and many were found dead in the woods and fields. The disease abated gradually in the area originally affected but had in the meantime spread to new areas. Early in 1943 fox rabies assumed epizootic proportions in southeastern Mississippi. This outbreak was brought to a halt by the killing of over 1,000 foxes in this area. The disease also spread to southern Mobile county and to the north into Choctaw and Clarke counties. Fox rabies became especially prevalent in Clarke county late in 1943. A fox control program was developed in this county under the direction of Mr. Andy Ray of the U. S. Fish and Wild Life Service. The hunting and trapping campaign resulted in the killing of 470 foxes. In addition, eighty dead foxes were found in the woods, presumably victims of rabies.

Fox rabies reappeared in Houston and Dale counties in 1944 and has spread to Coffee and Pike counties. Fox rabies still remains active in Mobile and Washington counties but on a reduced scale.

During 1943 and 1944 other epizootics of fox rabies have developed in Georgia, Mississippi, Louisiana, and North and South Carolina, but full information as to the extent of these outbreaks is not yet available.

In most instances the actions of rabid foxes are so characteristic that the heads are not submitted for examination. Foxes are normally timid and avoid human habitation. Foxes killed while invading farm yards in day time have consistently proved rabid by laboratory examination. Of the fox specimens submitted to the Alabama State Health Department, thirty-one were reported positive for rabies in 1943 and thirty-two in 1944. Nine persons were known to have been bitten by rabid foxes in 1944.

Two persons are known to have died of rabies as a result of having been bitten by rabid foxes. A seventeen year old white boy of Blaney, Kershaw county, South Carolina died of rabies in November 1942. He stooped down to pick up a sick fox and was bitten on the hand and face. A thirty-six year old white man of New Brockton, Coffee county, Alabama died of rabies in March 1945. He was bitten on the hand by a rabid fox that had invaded his poultry yard.

The widespread occurrence of fox rabies is a serious problem. The gray fox species has become overabundant due to favorable natural conditions and to protection by game laws. It is essential that action be taken to reduce the number of gray foxes in areas where rabies is present. It is not necessary or practical to attempt to exterminate foxes but their number must be reduced to a level where contact infection from fox to fox will not be frequent enough to maintain rabies. For the protection of their dogs and of their sport fox hunters should aid rather than oppose such control measures.

The rabies control program carried out in Burke county, Georgia can be used as a model for such measures. Due to the exigencies of war it has not been possible to attack the problem as efficiently in other areas. Under present conditions, hunting and trapping of foxes can be encouraged best by offering a bounty for each animal taken. This has been done in several of the counties mentioned above. Foxes are overabundant in many counties where rabies has not been introduced as yet. These counties should take similar measures for fox control in order to avoid introduction of the disease.

The skunk species is a favorable host for rabies. In 1875 rabies became established in the small spotted skunk species in Kansas. The disease was maintained in this species for several years. There was also a widespread epizootic of skunk rabies in Arizona from 1907 to 1910.[6, 7] Rabies became epizootic among coyotes in New Mexico in 1943. One hundred twenty-five coyotes and ten bobcats were found positive for rabies. This illustrates the potential danger of envolvement of new species of wild life.

In counties where dog vaccination has been properly enforced there have been no or only isolated cases of dog rabies despite the presence of rabies among foxes. Stray dogs should be destroyed in areas where fox rabies is present. All other dogs should be vaccinated. This can be facilitated by applying a temporary quarantine for dogs.

It is important that the heads of foxes and other wild animals suspected of rabies be sent to one of the laboratories of the State Health Department for examination so there will be definite evidence of the extent of the disease. Pamphlets on rabies can be secured from the State Health Department. These furnish all the necessary information about the disease and how to get animal heads examined for rabies.

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MEDICAL PRACTICE OF THE PAST

R. E. HALE, M. D.
Bellamy, Alabama

The Sumter County Medical Society was established in 1876. My father became a member during the 80's, and died in 1931 after nearly 50 years of membership. He began practice at Livingston and moved to York in 1881 where he remained. I recall days of my childhood when he would have me saturate a rag with chloroform and put it in a teacup and hold it over a patient's nose while he reduced a fracture or dislocation on our front porch. Standing on the ground, my father used the same front porch as an operating table and did amputations in open air with instruments laid out on the floor. Results were surprising. Thermometers had not come into general use at that time and the doctor got his bearings from a look at the tongue and by feeling the pulse. Bandages were from old sheets, and absorbent cotton was not sold in York until about 1910. Bedpans had snouts on them. They used squirt guns as fountain syringes, and you could practice medicine all day if your calomel and quinine held out.

In 1905 I had graduated and joined the Society, and now, in my fortieth year of practice, I have for the fourth time been honored with the presidency. I thank you. Without being morbid, I might venture that this will probably be my last chance to make the presidential address which has been asked of me each time, so I shall not let the opportunity pass.

My mind wanders. I have so much I want to say and I say it so poorly I fear you will not sense the feeling I try so hard to convey. However, I hope the pleasure of our association in this Society has been mutual and that all of you share the sentiment involved. If that be so, no further elucidation is necessary.

Any attempt to mention all of the names so near and dear to us in this Society would, I fear, leave out some of the most deserving, so with reverence we pass to the living present which, to my mind, presents a picture unrivalled in its history. The ruling which exempted from payment of dues of all members of 30 years standing was found to leave us without any means of support—Dr. Hunt having joined the Army and Dr. Hill was a counsellor—so we had to take up a collection for current expenses. A glance at our roster shows an average age of 70 years.

Old Captain Dexter was wont to remark, while in his cups, that his only trouble was old Anno Domini. Anno Domini, however, seems to mean little to this organization, which in the language of the poet, "Age cannot wither . . . nor custom stale." May I

President's Address delivered before the Sumter County Medical Society at its January 1945 meeting.

suggest that the oldest member, Dr. W. J. McCain, now Chairman of the Board of Censors, is no picture of senility as he goes about Livingston with all the vigor of the younger members. Dr. Scales, who has long since passed his three score years and ten, still reminds us of the Beau Brummel of the Gay Nineties, and take it from me, he was just that. Since we have moved him downstairs, I predict a new lease on life. Dr. Harwood, who never married until he was 70, now appears to have drunk of the Fountain of Youth. Dr. Hester, who will never see 70 again, is doing more active work than any other doctor in the county—they say he uses his car till the roads give out, then rides till the horse gives out, and then walks the rest of the way to his patients. Dr. L. F. Jackson of Panola will probably dispute this claim, as he is looking after North Sumter and part of Mississippi—he is going strong at 72. Dr. McDaniel, who I am sure is as old as I am, not content with a busy practice, farms on the side to take up his spare time. Dr. Spratt, the junior member of our Board of Censors, though not quite in our class as oldsters, thought to retire. But, to do his bit during the war, he assumed a job that would be a real headache to any of us, and, like the young man on the flying trapeze, he does his work with the greatest of ease—that of Acting County Health Officer. And now, let us not accept lightly our obligation to this public-spirited health officer who has a wealth of human nature, and, never letting "his left hand know what the right hand doeth," keeps both hands busy in a way that would make the good Samaritan look like a piker. With such youngsters as Drs. C. A. Jackson, Byrne, Wrenn and Minus, with only 30 years of membership, we suggest that only time is needed to attain the eminence of those just enumerated. They show promise, and in their progressive ways they have kept us in touch with the present. With Dr. Hunt as our lone representative in the service, Dr. Hill with his 20 years of membership is now our real baby; but the people of York tell us that he has done more in 20 years than I have in 40, so all honor to both.

Bear with me as we look backward. Forty years ago, country practice was done on horseback. Roads were impassable in bad weather. I practiced medicine in Bellamy three years before I made a business trip to Livingston. Outside of a 10-mile radius, our acquaintances were the perennial candidates who visited us, and the drummers. Joe Patton was beginning to get set about that time. What Henry Ford did for this country is inconceivable to the present-day mind. I doubt if Sumter County spent $100.00 a year on roads. Getting to a patient was sometimes a problem, and moving a patient was more. There were no nurses except the good neighbors, doctors usually doing their own nursing. You were expected to stay with a dying patient to the end. Placenta previas bled to death before your eyes. Eclampsias would frequently go from one convulsion to another, until death. Pernicious vomiting was sometimes fatal. Yellow chills had a death rate of 50 per cent. Cerebral forms of malaria were given up when you called it "congestion." Diphtheria took its toll with no antitoxin in reach, and no money to buy it. Colitis was treated by starvation; we did not know that lactic acid buttermilk would cure it. There was no ice in the country districts, and bowel troubles were prevalent and deadly. Typhoid was treated among swarms of flies. Yellow fever panicked the entire South at intervals. Hookworms were having a field day. Pellagra reared its ugly head, and poliomyelitis was taking its toll. An anomaly was malaria quietly curing syphilis each summer, leaving an appalling death rate among the whites but seldom killing a negro. The worst treated disease was gonorrhea with its complications mainly from treatment—only five years ago did I begin to suspect that it is a self-limited disease. Gloves were not used. Abdominal operations were done with bare hands; intravenous medication was unknown. Obstetric forceps had come into use to the point of malpractice, and septic fever followed. If the Lord ever forgives me for the lacerations ensuing, I may go to heaven, but I hope, if I get there, I never come face to face with any of my forceps victims. Emergencies were met, in some way or another. Dr. Goodloe told me he used a goose quill for a female catheter. I could not find the goose quill when I wanted it, so I cut a jonquil stem and it worked. We did some dentistry, at which I was not brilliant, frequently breaking off teeth and sending the suffering victim to the neighboring dentist for relief. Later, I got a protesting note from him, say-

ing, "You needn't break them off, Doc; I can find them."

Of late years there have been numbers of books by doctors which make good reading. The lifework of any doctor would make a thrilling history; particularly would this be true if he recorded his mistakes along with his triumphs. He might recall the time he gave the wrong medicine. I gave one of my patients a bichloride tablet. He recovered, but I shall never forget that night, and I still believe I suffered as violently as he did. I had a woman nine months in prenatal care, and when she began to have labor pains I learned that she had had a hysterectomy three years before. We gave up the idea of having a baby. I treated a ruptured tubal pregnancy and never knew what it was until we did a cesarean and found an 8-month dead fetus in the abdomen surrounded by membrane. Repairing a laceration after a bad forceps delivery in a negro cabin one night, the approximation was so bad that the patient came in two months later, with a confused and anxious husband, calling for more surgery. Her vagina was obliterated—sewed up.

During the good old days when abdominal operations were rare, and autopsies not permitted, a diagnosis might go unchallenged to the grave. Even then the wise old doctor seldom was a prophet—he left a bridge to back out on, and saved his reputation. Once this precaution was neglected when I was so sure old Uncle Milton Hines was dying, I sent a coffin to his home. Later, as I called by, he was sitting up in bed smoking his old pipe and gazing curiously through the window at the long box no one would explain.

With present-day x-rays, laboratories and autopsies to check on us, our batting average has come down to about 50 per cent. Old Dr. Kirkpatrick frequently remarked that the public was no judge of a doctor—they estimated personality. Except for the reassurance given, half of our patients need little else; given intelligent prenatal care, nine out of ten obstetric cases could get along without a doctor. A bit of well placed advice is often better than a pill. Under the watchful eye of the old family doctor a program that will keep people from getting sick will work wonders. The worst bridges are those we never cross, and doctors can allay such apprehensions and head off a neurotic tendency. Dr. Partlow is reported to have said that at the present rate of increase of mental patients, we would not have in 50 years enough sane to attend the insane.

My father had a book on practice by old Dr. Wood. The first chapter stated that Nature would cure four-fifths of all our ills if let alone. I do not know what proportion, but Nature seems to have cured a lot of mine before I had any idea of the diagnosis. An equally benevolent Nature has also taken some to the Great Beyond while I was wondering what to put on the death certificate. With no claim to originality, I have spent most of my active years trying to relieve the patient—hoping the diagnosis would come to the surface during the struggle.

The doctors of the nineties and thereafter were confronted with kaleidoscopic changes. One fad after another would arise and be discredited. One system would be set up and later discarded. Painless childbirth is a will-o'-the-wisp and unnecessary; labor pains have no terrors for the normal woman. The pharmaceutical houses made millions of dollars manufacturing pills and elixirs ad nauseam and sending a detail man around to outtalk and overstock us. Think of the cacodylate of soda we once bought, and now they have quit making it. Many of my patients bought hundreds of corpus luteum capsules before they were taken off the market as useless. It took the Wine of Cardui lawsuit to make us see that there is no "female tonic." And now, see how many high-priced endocrines we have on the market and how many doctors know how to use them. The American Medical Association has been trying to tell the public for years that no cold vaccine (oral or otherwise) is any good, but every pharmaceutical house is making them at a good profit. We are a busy and gullible set. No wonder the chiropractors horned in on us and the Christian Science folks proved that Nature knows her stuff. Could it be that chiropractors gave us the idea of operating on intervertebral disks, or that Christian Science made us study psychiatry?

But, with all these irregularities, there is left from the old days a therapeutic arsenal which will help us win. Aside from narcotics, there is no more valuable drug than belladonna; digitalis is a sheet anchor; chlorate of potash is our best gargle; bromide

of potash will work wonders; Fowler's solution is a good tonic; asafetida is a good bet in flatulence; and do not forget syrup of iodide of iron. Sweet spirits of nitre is a good diaphoretic and diuretic; compound spirits of ether will work wonders on hiccups, cramps, colic, palpitation and menstrual pains. The only possible reason for using castor oil is that it is still our best purgative; syrup of ipecac will cure croup, relieve any cough, and help asthma. Sulphur will still cure itch. Santonin has its own peculiar field; santal oil is the urinary antiseptic. Iodide of potash is good for every disease except tuberculosis. Epsom salts and turpentine are on every mantel. No better anesthetic than chloroform has ever been used in labor cases, nor have I ever heard of any ill effects from such use. It will also raise a blister ten times quicker than a mustard plaster. If you do not believe it, sit on it. Rub a small piece of blue ointment on a syphilitic baby's back every night, and you will have a healthier Negro. Atabrine may be all right, but quinine is here to stay—if we can ever get it again. Argyrol will work wonders in cystitis, colds, sinuses and ophthalmia. It takes three people to put a solution in a baby's eyes. You cannot cure an infection by giving orders—you must see argyrol put in the eye.

Morphine is our most important drug; it is our first thought in eclampsia, in renal and biliary colic, in cardiac pain, in convulsions of childhood, in injuries, fractures and shock. Fearing addiction, doctors hesitate to use it. We are told that addicts are born, not made. A stranger in a city with renal colic is out of luck. Most doctors suspect he is an addict putting on a show. He probably will not get much attention until he gets back to his home doctor, and by that time he may be all right. A mistake on the human side might not do much harm. Here I shall suggest that the soluble codeine phosphate is much preferable to the insoluble sulphate.

No mention of early medical practice could be complete without naming calomel. No patient could ever believe he was properly treated until and unless he had taken about ten grains of calomel and spent a miserable night over a slop jar. That was preliminary to all treatment. To make it real, he had to have some red pepper and podophyllin along with it. Calomel itself was not bad enough. Our friend Will Chadwick of Cotahaga one day asked Dr. Lamkin for a dose of calomel—he was bilious and hard to work. Lamkin gave him a dose with a liberal supply of podophyllin and red pepper. Will said to make it strong, as he took a horse dose. Lamkin put his heart in it. He stopped by Cotahaga the next afternoon and as he espied Will emerging from behind the depot, he asked him about results. Sadly, though weakly, Will waved a scrap of newspaper at him and said: "That's all there is left of the Sunday Age-Herald." But now, calomel is in the discard, and podophyllin is no longer in the pharmacopeia. Various reasons are given for its use but the only one that left me guessing was that we had less appendicitis when it was in general use.

Remarkable scientific progress during the past 50 years has broadened our field to an extent that makes it impossible for the old family doctor to master all the specialties. At times it appears that he is like unto a guide post, but let it be said of him that he is a good one. Our patients want the best in obstetrics but they are not able to pay $200.00 for it. A case of appendicitis should not bankrupt a family. Gallbladder symptoms ought not to call for $50.00. All children do not need tonsillectomies. Practical advice to anxious parents, as these and other irregularities are ironed out, is a real necessity, and if they do not get it from their family doctor they will absorb ideas from the daily papers' health talks, radio plugs, and patent medicine advertisements. The pendulum swings back and forth with the conservative and extreme elements. Surgery has had a wonderful day and now chemotherapy astounds us. Withal there is a misdirected effort and a resulting confusion which make some believe that our organization is endangered. I do not share this uneasiness, but rather believe the leaven is working to evolve a plan which, through trial and error, will be a solution of our problem—changes, of course, but looking backward we can see how far we have come and rise to meet the challenge.

Health centers, laboratories, hospitals with outpatient facilities, competent administration and efficient service will be developed to a point which will insure prompt attention at a nominal cost and retain the

personal features our profession has so long fostered. This can all be done in a cooperative spirit, as we get down to essentials, and work it out. Let's go.

In our college days we basked in the glamor of great teachers, wonderful internists and skilful surgeons, and had our dreams. Some, by hard work and harder study and application, made names that will go down in medical history. All honor to them. But, in the practice of medicine, as in other pursuits, it is not given to all that we should become great. There must be plodders—not useless plodders without ambition or interest, but earnest workers doing the best they can with what they have; doing work that would perhaps be undone if they did not do it; to be in there pitching all the time. A doctor should have a conscience but it must of necessity be elastic. We know so little, it is but natural to be in doubt. We have to guess at so much that it may be a real fault to be too positive.

"Be not the first by whom the new are tried
Nor yet the last to cast the old aside."

Yet, there are times when we must make a decision and act; in such times hesitation is a sin. Act forcefully and in a way that inspires courage in others, and, whatever the result, the average will be on the right side of your ledger. On the other hand, when a harassed and uncertain mind leads you to some meddlesome interference, with no good end in sight, trouble begins. Verily, a Solomon is needed, and that is what we must always strive to be—a Solomon in our judgment. Postmortems may cause you a lot of grief but a life of conscientious work along these lines will at least entitle you to the epitaph on the cowboy's tombstone:

"He done his damndest,
Angels could do no more."

The private physician determines the presence or absence of tuberculosis. He has the responsibility, not only of making a diagnosis and advising treatment when indicated, but also of convincing the patient to accept his advice. The physician should be meticulously careful that in an effort to spare the feelings of the patient he does not minimize the importance of the disease, both to the individual and to his family and other associates. The patient should realize that he has tuberculosis, . . . that continued observation is absolutely essential, and that if treatment is indicated it is imperative that he accept it.—*Roberts Davies, M. D., Nopeming San., Nopeming, Minn.*

Cancer Treatment—The results from good cancer surgery and irradiation therapy cannot be compared to ordinary applications of these methods of treatment. When the facilities for training are ample, I think we will have doctors specially trained in the diagnosis and treatment of cancer in every medical community. Until that time comes, however, the responsibility for an early diagnosis, and often the direction of treatment, rests on the general practitioner. The general surgeon and the general radiologist in most instances will carry out the treatment. This is a serious responsibility, for, out of every twenty people born, cancer will claim the life of one. After the age of 40, one out of every seven deaths is from cancer. After a steady climb from fifth place, cancer stands only second in the cause of deaths.

In order to choose the proper treatment an accurate diagnosis must be made. This means knowing what kind of tissue the tumor comes from; its degree of malignancy; and how far it has extended in the patient's body. The origin of the tumor and its nature are determined by biopsy, and there are no exceptions to the need for this procedure. The most skilled surgeons and radiation therapists make a substantial percentage of mistakes when they depend on clinical and gross pathologic evidence for the diagnosis of cancer. Only by microscopic examination can one tell whether he is dealing with a primary tumor or metastasis from a distant or internal tumor.

To determine the extent of spread of the tumor most of the fields of examination are used. A very complete physical examination is, of course, necessary. X-ray studies will reveal metastases to lungs and bones. Endoscopic examination with either the cystoscope, peritoneoscope, bronchoscope or gastroscope often help to determine the size and extension of the tumor. In accessible tumors on the body surfaces or cavities, biopsy is a simple procedure. It is best obtained with a sharp knife or special cutting biopsy instrument. It should come from an active growing portion of the tumor mass, not necessarily from its border, and it is best *not* to suture the wound. Bleeding can be controlled by chemical heat or high frequency cauterization. The tissue can be examined by permanent section methods either locally or sent to a pathologist. There is no satisfactory evidence to prove that a biopsy, if properly done, is dangerous; it is much safer than rough palpation of the tumor. In general, when the tumor is not accessible, frozen section examination at the time of the biopsy is definitely preferable. The biopsy may constitute the entire treatment, or become a part of the operation if extensive surgery is indicated. This plan definitely handicaps the doctor to whom pathologic service is not available.—*Woods, Texas State J. Med., April* '45.

Complying with the request of the Office of Defense Transportation, the 1945 annual session of the Association has been cancelled.

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NASAL VASOCONSTRICTOR MEDICATIONS

"No class of drugs is more widely distributed and used than are nasal vasoconstrictors. This is due to advertising of 'patent' nostrums in press and radio, to exploitation of new compounds to the profession by pharmaceutical houses, and to wide prescription of these drugs by physicians. Tabulation reveals that there are nationally distributed at least 240 nasal vasoconstrictor compounds in the form of drops, sprays, inhalents and ointments. It is timely to question whether the increased use of vasoconstrictors is justifiable and whether there are not disadvantages inherent in these drugs which demand a reappraisal of the indications for their use."

In these words does Kully[1] open his consideration of this most timely subject. His paper was read before the Section on Laryngology, Otology and Rhinology at the Chicago session of the American Medical Association. The author concludes that—

1. A revaluation of the increased use of nasal vasconstrictor medication is indicated.

2. The primary vasoconstricting effect of sympathomimetic drugs is usually followed by secondary vasodilatation.

3. This secondary vasodilatation is influenced mainly by the type and amount of the drug employed and the sensitivity of the individual vasomotor mechanism.

4. The addition of antiseptics, particularly sulfathiazole solutions, to vasoconstrictor drugs increases the irritant properties without compensatory therapeutic benefits.

5. Judicious use of vasoconstrictive medications is indicated in surgical, manipulative and displacement procedures and in some acute nasal infections, notably acute sinusitis.

6. The indiscriminate use of this medication in acute rhinitis lengthens the course of infection and increases the incidence of sinus and otitic complications.

7. Vasoconstrictor drugs may of themselves produce a vasomotor rhinitis indistinguishable from that due to allergy. Vasomotor rhinitis, allergic in origin, is made more severe by constricting medication.

8. The use of vasoconstrictor drugs in chronic obstructive pathologic conditions adds the factor of secondary congestion to the obstruction already present.

Kully has done well to call our attention to this subject, because this form of therapy is certainly one of the most abused in all therapeutics. The widespread, indiscriminate and, above all, excessive use of nasal vasoconstrictors certainly causes an untold amount of damage, which, all too often, is not realized. And to prevent or reduce this excessive use the practicing physician can do two things. He can caution his patients against the improper use of these drugs and he can refrain from prescribing them himself, except upon the relatively infrequent occasions when they are indicated. And he will probably agree with Kully that "it is difficult to induce patients to discontinue the use of vasoconstrictors after long periods of self medication. It is a habit the breaking of which requires much persuasion and understanding on the part of the physician. Many patients cannot sleep without their drops or inhalants and these will for brief periods require sedation in the form of barbiturates or bromides."

1. Kully, Barney M.: The Use and Abuse of Nasal Vasoconstrictor Medications, J. A. M. A. 127: 307 (Feb. 10) 1945.

REGISTRATION OF MEDICAL LICENSE

The Secretary of the State Board of Medical Examiners has addressed a communication to Chairmen of County Boards of Censors and Secretaries of County Medical Societies calling attention to the provisions of the law relating to registration of certificates of qualification to practice medicine in Alabama. The letter follows:

Inasmuch as two Judges of Probate have advised this office that certificates of qualification to practice medicine in Alabama were not recorded in their offices, it seems indicated that you direct the attention of all physicians in your county to Section 265, Title 46, Code of Alabama, 1940, which reads as follows:

"A physician who receives a certificate of qualification shall within ten days after locating in a county file said certificate in the office of the judge of probate of such county for record, and should said physician remove his residence to another county he shall within said time have his certificate recorded in that county. Any failure on the part of the holder of a certificate of qualification to comply with the provisions of this section within ten days after written notice so to do by the chairman of the county board of health shall render such certificate null and void. A physician may voluntarily surrender his certificate to the State Board of Medical Examiners if he does so in writing with two witnesses. Notice of such surrender shall be given by said board to the judge of probate of each county in which the certificate is recorded."

A letter is being addressed to each Judge of Probate in the State regarding this section of the law, as well as that section requiring them to keep a register for the recording of certificates of qualification. Please request all physicians, if they have not done so, to record their certificates at the earliest possible date.

The Secretary of the Board has also directed the following letter on the same subject to the several Judges of Probate:

Section 265, Title 46, Code of Alabama, 1940, provides that a physician who receives a certificate of qualification to practice medicine in this State shall file said certificate in the office of the Judge of Probate for record. It is an established policy of the State Board of Medical Examiners to first advise applicants of the existence of this law before granting them certificates. However, because of the apparent neglect of certain physicians to comply with this section of the law their attention is being directed again to it and advised to immediately comply with it.

In this connection, your attention is directed to Section 266 of the same Title and Code. It would be most helpful to this office if you would comply with this latter section by furnishing us the report as set forth.

It is hardly necessary to impress further on the minds of our physicians the importance of compliance with the foregoing law relating to the registration of their certificates of qualification to practice medicine in this state.

ALLIED HEALTH COUNCIL OF ALABAMA

In a letter to all members of the Medical Association of the State of Alabama, the Alabama Pharmaceutical Association, the State Nurses' Association and the Alabama Dental Association, Dr. B. F. Austin, State Health Officer, has asked them to cooperate with the recently organized Allied Health Council of Alabama in promoting the Council's plan to lift the healing levels of the people of this State.

Dr. C. B. Bray, President of the Alabama Dental Association, was elected president of the Council, and Mrs. Thelma M. Coburn, Executive Secretary of the Alabama Pharmaceutical Association, was named secretary-treasurer at the meeting at which the new organization was formed. The Executive Board consists of Dr. B. F. Sapienza, representing the Alabama Dental Association, Mrs. Walter Bragg Smith, representing the State Nurses' Association, E. W. Gibbs, representing the Alabama Pharmaceutical Association, C. L. Sibley, representing the Alabama Hospital Association, and Dr. Austin, representing the State Department of Health.

The Council's objectives, as outlined in Dr. Austin's letter, are to coordinate the activities of the five basic groups represented, conduct an educational campaign to increase interest in the State's public health work, and advance the interests of allied professions.

"There are many health problems in the several fields to stimulate the varying interests of the individuals in the different groups composing this council," the State Health Officer wrote. "All of the allied professions are facing a difficult period of adjustment in the postwar era and this council can be of inestimable value in serving to promote and protect your individual interests, as well as those of your profession and the people you serve in our great State. I heartily endorse the principles and objectives of the Allied Health Council of Alabama and respectfully urge your cooperation in supporting its programme."

PUBLIC HEALTH IS MANY THINGS

The State Department of Health has published a 36-page illustrated booklet entitled Public Health Is Many Things which is available without charge to physicians desiring a copy. The booklet discusses the work of the State's public health agencies and the public health problems of particular importance to Alabamians.

Representative titles of some of the articles in the booklet are: Keeping Water Supplies Safe; State Boasts An Important First; The Public Health Nurse Plays An Important Role; Cancer-Control Program Is Aimed At An Ancient Enemy; Free Maternity Care for Mrs. G. I. Joe; This State A Pioneer in County Health Organization; Building A Stronger State With Better Food; Charting Course of Public Health; Better Health Via the Airways; Rabies Research in Alabama; Public Health Agencies Battle Many Hazards of Motherhood; Laboratories Have Vital Role in Public Health; Public Health Makes Gains in War on Venereal Diseases; Malaria, The Plague of the Centuries, Is Being Mastered; Medical Science Pulls Fangs of Deadly Tubercle Bacillus; Rat Destruction Holds Key to Endemic Typhus Control; Protecting Food and Drink; Negroes Greatly Complicate State's Health Problems; Public Health Agencies Stand Guard Over Workers' Health; Curbing Hookworm by Sanitation; and Wholesale Life-Saving Follows in Wake of Public Health Work.

Requests for copies of the booklet should be addressed to the State Department of Health, Montgomery 4, Alabama.

STATE DEPARTMENT OF HEALTH

BUREAU OF ADMINISTRATION

B. F. Austin, M. D.
State Health Officer

CONTROLLING MALARIA

Malaria is one of the oldest and most impoverishing diseases known to medical science. It is known to have been endemic in Rome during the second century before Christ and there is good reason to believe it had a part in that city's decline, as well as the decline of its rival, Greece. For 30 centuries or longer it has been attacking people by the millions, incapacitating several times more soldiers in most wars than have become casualties from enemy action and leaving its victims—those whom it has not killed—weak, energyless and inefficient. Particularly serious in Alabama and other states of the South, it has brought poverty, social backwardness and mental dullness to the areas in which it is endemic. Significant of its importance in the general well-being of this part of the country is the fact that, when the National Emergency Council selected five major disease problems as of particular factors in the well-being of the South and discussed each of them in its report to the President, it devoted one paragraph to syphilis, six lines to pellagra, a singe paragraph to pneumonia and tuberculosis combined, and three paragraphs (nearly a full page of printed matter) to malaria.

The medical profession, the public health agencies and research workers have been struggling valiantly against this enemy literally for thousands of years. Progress has been made with drainage projects, the treatment of cases with quinine and atabrine, and large-scale mosquito-killing campaigns. But the net result of all these measures has been that the disease was only curbed, with a promise that it would continue to be curbed only as long as extensive control measures were continued. There seemed little hope that such measures as were then in use would solve the malaria problem in the South as effectively and as permanently as, for instance, the supervision of public water supplies and typhoid vaccine have conquered typhoid fever.

Now, however, there is a promise of success in the campaign against malaria which will match the success of the campaigns against typhoid and smallpox. That promise is held out to a disease-oppressed section by a relatively new and powerful insecticide known to experts in parasitology and the medical profession as dichlorodiphenyltrichloroethane and to the general public as DDT. In its chemically pure state it con-

sists of a crystalline solid. It is practically odorless and colorless and relatively stable. Insoluble in water, it nevertheless readily dissolves in certain organic solvents. Fortunately, it has a low volatility, which fact greatly increases its value as an insecticide. It is what is known as a contact poison and kills insects by attacking and destroying their nervous systems. Although the swallowing of the product in considerable quantities by humans is harmful, the amount entering the system in the ordinary use of the product or while occupying a room in which it is being used has been found to be as harmless as the same amount of the ordinary household insecticides.

Although DDT has been used successfully in its powder, or crystalline, form, notably in a successful campaign against a serious typhus epidemic which broke out in Naples in October 1943, it is used most satisfactorily in antimalaria campaigns after being turned into a liquid by dissolving the powder in a suitable solvent, the identity of which the writer is not at liberty to reveal. The solution, after being diluted by several times its own volume of water, is sprayed on walls and ceilings with a pump similar to that used to spray fruit trees to kill insect pests. Although the spray is as harmless as other commonly used insecticides, its use is not a job for home-owners or other amateurs but for those who have been trained for that work.

Although the limited supply of DDT now available is still in great demand for the protection of men and women of the armed services and the people of liberated countries, a small amount has been turned over to the U. S. Public Health Service for use, in cooperation with state and county health departments, in an antimalaria campaign in 13 southern states where the malaria problem is most serious. Alabama is one of those 13, the others being Arkansas, Florida, Georgia, Louisiana, Mississippi, North and South Carolina, Tennessee, Texas, Maryland, Oklahoma and Kentucky. Needless to say, the campaign will not cover all of these states, or, for that matter, all of any one of them. In only five Alabama counties—Autauga, Dallas, Greene, Lowndes and Montgomery—will as much as half of the total area be included. Only a small portion of the sixth county—Marengo—will be covered. It goes without saying that the areas selected were chosen because malaria was known to be especially serious there. It should be pointed out, however, that the limiting of the 1945 campaign to those six counties does not by any means indicate that other counties do not have serious malaria problems. Whenever the supply of DDT available for antimalaria work becomes sufficient, the public health agencies would like to see it used in every community in the State where malaria is a health problem.

The DDT antimalaria program in Alabama, as in the other 12 states, is a joint undertaking by the U. S. Public Health Service, the State Department of Health and the local health departments of the counties directly involved. The U. S. Public Health Service's participation is a part of its malaria control in war areas program. It has made federal funds available for the training of personnel and the purchase of supplies and equipment. It has also agreed to make available to the participating state health departments all necessary information regarding the product and how it should be used, assist in the training of state personnel working with Public Health Service engineers in the campaign and assist in other ways. The Alabama State Department of Health, like the other 12, will formulate policies and procedures to be followed, act as a central administrative office, and cooperate with county health departments in those six counties in the execution of specific projects within these counties. Each project also will be a part of the general public health program of the county in which it is to be conducted and, as such, will be under the personal supervision of the county health officer.

The extensive research work which has been carried on to determine the insecticide possibilities of DDT has demonstrated that it is particularly effective against mosquitoes, and also against such household pests as flies, roaches, moths, fleas and ants. The part it is likely to play in the protection of fruits and vegetables against their insect enemies remains largely to be determined by further experimentation.

Unlike other insecticidal compounds, DDT does not instantly kill the insects with which it comes into contact. Instead of bringing instant death, it produces nervous symptoms, which manifest themselves within a few minutes, while death may not occur until

an hour or more later. Although tests thus far conducted have not shown exactly how long a fly or mosquito must remain in contact with DDT before it receives enough of the poison into its system to kill it, these tests indicate that the requisite time is very short, probably less than a minute. Fortunately, a mosquito, and apparently a fly, as well, will remain in contact with DDT as long as may be necessary to produce death, or until it begins to feel the effects.

DDT also differs from other insecticides which, having no appreciable residual effect, must be applied directly to the mosquito or other insect before they can destroy them. Because of its low volatility and stable characteristics, DDT has considerable residual effect, which means that it kills flies, mosquitoes and other insects coming into contact with a wall, ceiling, curtain or other surface which has been sprayed with DDT as long ago as three months. The value of this characteristic in mosquito killing as a form of malaria control is readily apparent. Thus one or two sprayings are sufficient to protect a house for the entire mosquito season. Two gallons of the spray, including a very small quantity of the DDT powder, is sufficient to treat the ordinary residence.

The cooperation of the occupants of a house is necessary for successful application of the DDT spray, although, fortunately, only slight inconvenience and disarrangement of the furniture is required. The main thing to be done before the spraying itself gets under way is to move the furniture to the center of the room so as to allow the sprayers full access to the walls. Pictures, mirrors and other ornaments should also be taken down for the same reason and also to permit every square inch of the walls to be sprayed. Food products, dishes, pans and other cooking utensils should be covered or placed in a cupboard, and all fires should be extinguished. The odor, while only slight, is somewhat disagreeable but can hardly be detected after the room has been thoroughly aired for half an hour.

Those in charge of the DDT mosquito-killing campaign recommend that the concentrate (the solvent containing the DDT powder) be mixed into the spray at the place where it is to be used instead of being mixed at some central point and transported a considerable distance. There are no practical difficulties in the way of doing so as the procedure requires only the dilution of the concentrate by adding the necessary amount of water.

For the spraying of residences, it has been found that the most satisfactory proportion of DDT is 100 milligrams (slightly more than 3 10,000 of an ounce) per square foot of surface area. To obtain this dosage, the spray must be applied at the rate of 4 cc. per square foot. The hand-operated pressure sprayer which has been found most effective for this type of work sprays about 200 square feet a minute.

Readers are warned not to expect malaria to disappear as a serious health problem immediately after the DDT campaign gets under way, even in those areas where the campaign will be carried on. Even a revolutionary product like this cannot be expected to dispose in a few weeks or months of a disease which has plagued the people of Alabama and of much of the rest of the world for centuries. However, the mosquito-killing powers of this product have been fully demonstrated, and there is every reason to believe that even the limited-scale campaign now under way will mark a great forward step in the conquest of this form of illness. And as soon as sufficient quantities of DDT are made available for use in all communities where malaria is a problem, a tremendous reduction in malaria incidence and malaria mortality may confidently be expected. Needless to say, the public health agencies are eager to give the people of Alabama the complete benefit of that form of life-saving as soon as possible.

Very little has been learned in the field of preventive medicine that can be of much use for the individual person who acquires rheumatic fever and, in this respect, we must continue to do the best we know, which is little more than what was known to, and practiced by, the earlier physicians. But in the field of public health, great advances have been made and much can be accomplished, provided certain measures can be carried out for the whole community which result in real protection for the individual. This same situation is equally true for several other important diseases; for example, tuberculosis and infantile paralysis in which, in each case, the cause of the disease and the way in which it is spread is now well known, but where no specific form of treatment exists with which the individual patient may be relieved.—*Hugh McCulloch, M. D., Minnesota Med., Dec.* 1944.

BUREAU OF LABORATORIES

Samuel R. Damon, Ph. D., Director

SPECIMENS EXAMINED

MARCH 1945

Examination for diphtheria bacilli and Vincent's	498
Agglutination tests (typhoid, Brill's, undulant fever)	721
Typhoid cultures (blood, feces and urine)	729
Examinations for malaria	619
Examinations for intestinal parasites	2,212
Serologic tests for syphilis (blood and spinal fluid)	38,184
Darkfield examinations	54
Examinations for gonococci	3,731
Examinations for tubercle bacilli	1,790
Examinations for Negri bodies (microscopic)	104
Water examinations	1,289
Milk examinations	2,242
Miscellaneous	933
Total	53,106

BUREAU OF PREVENTABLE DISEASES

D. G. Gill, M. D., Director

CURRENT MORBIDITY STATISTICS

1945

	Jan.	Feb.	E. E.* Feb.
Typhoid	1	6	6
Typhus	39	20	12
Malaria	118	113	49
Smallpox	2	0	3
Measles	50	56	550
Scarlet fever	98	92	76
Whooping cough	81	61	83
Diphtheria	46	34	37
Influenza	968	781	2472
Mumps	167	230	206
Poliomyelitis	2	7	2
Encephalitis	1	1	1
Chickenpox	143	118	206
Tetanus	3	2	3
Tuberculosis	199	174	224
Pellagra	2	0	11
Meningitis	38	21	14
Pneumonia	391	430	665
Syphilis	731	733	1424
Chancroid	16	13	8
Gonorrhea	570	475	374
Ophthalmia neonatorum	0	0	0
Trachoma	0	0	0
Tularemia	1	0	2
Undulant fever	12	6	2
Dengue	0	0	0
Amebic dysentery	6	2	0
Cancer	178	247	0
Rabies—Human cases	0	0	0
Positive animal heads	3	29	0

As reported by physicians and including deaths not reported as cases.

*E. E.—The estimated expectancy represents the median incidence of the past nine years.

IMMUNE SERUM GLOBULIN

Immune serum globulin (gamma globulin) for the prophylaxis, modification and treatment of measles is now available for the civilian population through an appropriation by the American Red Cross as announced by Mr. Basil O'Connor, Chairman of the Central Committee of the American Red Cross. This action is in keeping with the policy of the American Red Cross to return to the American people, so far as practicable, any useful blood derivatives accumulated in excess of military needs as a result of its blood donor program.

The serum globulin will be supplied without charge to state and territorial health departments or local health departments where biologics are not supplied by the state, provided that the globulin will be distributed without charge to physicians, hospitals and clinics, and provided that it will be administered in accordance with established standards and without any charge to the patient for the globulin.

As announced in the July 1, 1944 issue of the Journal of the American Medical Association, health departments assumed the costs of processing and distributing immune serum globulin. Under the new plan the entire cost of processing and distributing the product is now borne by the American Red Cross.

The crude serum globulin fraction thus made available is derived as a by-product from processing serum albumin under Navy control. It has been declared surplus and assigned by the Navy to the American Red Cross for distribution.

Eligible health agencies are being requested to place their orders promptly with National Headquarters, American Red Cross, Washington, D. C., attention of Dr. G. Foard McGinnes, National Medical Director.

BUREAU OF SANITATION

T. H. Milford, M. S. in S. E., Director

MAPPING FOR TYPHUS CONTROL

Contributed by

W. H. Gilmore
Senior Public Health Engineer

More cases of endemic typhus fever were recorded in 1944 than in any previous year. A total of 890 cases were reported from 46 counties, exceeding the previous peak year, 1933, by 57 cases and the number of infected counties by 19. The heaviest incidence of the disease, as in former years, was reported from the southern section of the State. Mo-

bile and Houston counties had all time high records for the year.

The problem of typhus control can be likened in some ways to malaria control. Just as the vector of malaria is the mosquito, the rat is the responsible agent for typhus, although the disease is flea-borne from rat to man. Next it is a well known fact that the control of malaria depends upon the elimination or sufficient reduction of the mosquito population or at least the elimination of the infected pest. Likewise the control of typhus depends upon the suppression or reduction of the rat population or the infected rodents. To combat malaria intelligently the malarious areas are mapped. It is known that the *Anopheles quadrimaculatus* mosquito, the southern malaria vector, seldom flies more than one mile from its breeding place. Hence, by spotting the malaria cases in a county over a period of several years, practically all foci responsible for malaria can be located. After locating the potential foci in this manner, further investigations and planning can be carried on intelligently. Thus, by merely sitting in the office and spotting reported cases of malaria, members of the local health department can eliminate much hard field work, considerable guess work, time and expense.

It is believed that a similar, simple step would greatly expedite the work of controlling typhus when the problem is attacked in a particular county. Endemic typhus is a relatively new problem in Alabama. It was made a reportable disease only a few years ago and some counties have yet to report the first case. Therefore, it should be relatively easy to prepare spot maps and in many counties spot every case that has been reported. It is believed that such a map will show the cases relatively grouped rather than being scattered widely over the county. If such maps had been available in the past when large rat extermination programs were in progress, the foci could have been concentrated upon. Concentration upon these foci would no doubt have greatly lessened the typhus occurring since then. At some time in the future no doubt some attempt will be made at rat extermination if the number of typhus cases in the county is large or increases greatly. Considering the help such a map should be when a campaign is begun, the county health personnel, especially a county sanitation officer, is not doing its full duty if these maps are not prepared and kept up to date.

To prepare a spot map, blueprint maps of the county should be procured (ordered from the State Health Department). Blueprints are suggested since they do not fade as badly as others. It is believed that one-half inch to the mile scale maps will be sufficient and probably preferable. The maps should be mounted on a board which will hold colored pins securely. Preferably the map should be framed. This will make an attractive map for the office wall. Where cases of typhus are occurring in a town, a sanitary survey map might be used to make the spot map. These should likewise be blueprints.

After the map has been obtained and mounted, the task of spotting the cases begins. The files in the local office should have the name and date of every case of typhus which has been reported. Probably it would be easier to begin by spotting the current cases and working back. Each year's cases back to about 1942 should be spotted with a different colored pin. From 1942 it is suggested that one color be selected and used for all cases occurring previous to 1942, regardless of the year. This is necessary because there is not enough different colored pins to select from and the older cases do not have the same significance as the newer ones.

For the map to mean much, it is necessary to determine as nearly as possible where the case was contracted. For example, if a person had worked in a grocery or feed store for several weeks prior to becoming ill, it is more logical to spot the case at the store than at the person's home. In rural sections, when a person spends his time on the farm and very seldom visits town, his house or barn is the logical place to suspect, especially if the rat infestation is heavy. The above method of spotting may show that several persons from a particular store have had typhus in the last two or three years, whereas, if their homes were spotted it would mean very little. To make a reasonably accurate map requires investigation to try to determine where each person might have contracted the disease. However, after the map is up to date it is relatively simple to keep it up.

The Typhus Division of the Bureau of Sanitation is glad to help anyone interested in

making spot maps by advising and helping to secure maps, pins, etc.

The complete eradication of rats in Alabama is almost an impossibility but the disease can be controlled by the extermination of rats in the infected area and by keeping it rat free until the infected fleas have died or have become non-infectious. Spot maps of cases greatly facilitate this work.

Rat proofing and sanitation are the only hope of a permanent reduction in the rat population and can be accomplished only by intelligent building and competent engineering standards of construction, strict sanitary regulations in regard to food products, and a continuous warfare on the rat.

BUREAU OF VITAL STATISTICS

Ethel R. Hawley, Acting Director

PROVISIONAL MORTALITY STATISTICS FOR 1944

The mortality experience for the third war year continues good. The provisional death rate for 1944 of 8.9 per 1,000 population will probably be slightly higher when all certificates are in and final tabulations are made. This compares favorably with the final rate of 9.1 for 1942 and 9.2 for 1943.

Only a few causes show an increase in rate. There were more deaths from meningitis than in the prewar years but this cause did not reach epidemic proportions. Cancer shows a steady increase in rate. Undoubtedly a part of this increase is due to the increased number of persons who are going to physicians for diagnosis.

Pellagra, with a rate of 3.4 per 100,000 population, and pneumonia, with a rate of 49.6, are the lowest on record and will probably hold that rank when final tabulations are made.

The infant death rate of 46.4 per 1,000 live births is slightly higher than the rate of 44.4 for 1943 but 21 per cent less than the rate of 58.7 in 1941, the last prewar year.

The puerperal death rate of 38.3 shows a slight increase over 1943. Undoubtedly this increase was due to the fact that in 1942 and 1943 the Bureau was unable to send out any queries to the physicians on cause of death.

In 1944 the querying of incomplete and unsatisfactory causes (from a statistical standpoint) was resumed. The response of the physicians has been most gratifying. A total of 2,203 replies was received which enabled the Bureau to classify the cause of death more precisely. This is evidenced by the fact that the rate for syphilis was increased 12 per cent; the rate for diseases of the puerperal state was increased 6.7 per cent, while that for puerperal septicemia was increased 15.5 per cent. There was an increase of 6.4 per cent and 9.8 per cent in the rate for suicide and homicide, respectively, while the accident rate decreased 3.5 per cent. There were 435 death certificates on which the cause had to be classified as ill-defined or unknown but which, after querying, could be allocated to some more definite cause. This reduced the rate in the ill-defined and unknown category from 75.1 per 100,000 population to 60.6, a reduction of over 19 per cent.

Since a few replies were received too late for this tabulation, the final figures for 1944 for some causes will be different from these provisional figures. However, at the time this tabulation was made all replies in hand at that time were taken into consideration.

MORTALITY STATISTICS FOR 1942-1944

	Number of Deaths, 1944 (Provisional)	Annual Rate Per 100,000 Population		
	Total	1944	1943	1942
Births (exclusive of stillbirths)	72418	25.0	27.1	25.0
Stillbirths	2338	30.0	29.0	31.7
Deaths (exclusive of stillbirths)	25848	8.9	9.2	9.1
Infant deaths Under one year	3358	46.4	44.4	49.3
Under one month	1997	27.6	26.0	30.1
Typhoid and paratyphoid fever (1, 2)	16	0.6	0.5	0.3
Cerebrospinal meningitis (6)	81	2.8	2.1	0.8
Scarlet fever (8)	3	0.1	0.1	0.1
Whooping cough (9)	87	3.0	4.8	3.3
Diphtheria (10)	59	2.0	1.5	1.4
Tuberculosis (13-22)	1242	42.9	45.2	45.5
Malaria (28)	40	1.4	2.1	3.2
Syphilis (30)	419	14.5	12.2	14.6
Influenza (33)	609	21.0	21.7	15.3
Measles (35)	86	3.0	0.6	1.0
Poliomyelitis (36)	10	0.3	0.3	0.6
Encephalitis (37)	13	0.4	0.2	0.4
Typhus fever (39)	45	1.6	0.9	1.0
Cancer, all forms (45-55)	2062	71.2	64.1	64.2
Diabetes mellitus (61)	323	11.2	12.2	13.2
Pellagra (69)	98	3.4	4.7	5.7
Alcoholism (77)	28	1.0	0.8	1.4
Intracranial lesions (83)	2380	82.2	79.4	80.1
Diseases of the heart (90-95)	5066	175.0	176.3	165.3
Diseases of the arteries (96-99)	265	9.2	10.0	11.4
Bronchitis (106)	40	1.4	1.6	1.0
Pneumonia, all forms (107-109)	1434	49.6	54.6	50.4
Diarrhea and enteritis (under two years) (119)	295	10.2	8.9	9.4
Diarrhea and enteritis (two years and over) (120)	79	2.7	2.6	3.2
Appendicitis (121)	176	6.1	6.6	5.3
Hernia, intestinal obstruction (122)	174	6.0	6.9	6.9
Cirrhosis of liver (124)	119	4.1	4.6	4.4
Nephritis, all forms (130-132)	2150	74.3	72.1	73.0
Diseases of puerperal state (140-150)	286	38.3	37.2	39.0
Puerperal septicemia (140, 142a, 147)	89	11.9	10.0	13.8
Suicide (163, 164)	145	5.0	5.4	6.3
Homicide (165-168)	323	11.2	10.6	13.5
Accidental deaths (exclusive of motor vehicle)	1349	46.6	50.8	52.2
Motor vehicle (206, 208, 210, 211)	495	17.1	16.3	20.4
All other known causes	4096	141.5	143.6	145.1
Ill-defined and unknown (199-200)	1755	60.6	80.3	78.6

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BACKGROUND

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THE PREDICAMENT OF MODERN MEDICINE

M. S. DAVIE, M. D.
Dothan, Alabama

The predicament of modern medicine is a multiform affair and only a few phases of it can be presented in but brief and superficial manner at this time.

It is common knowledge that we are having a global revolution in human affairs, and no group of society will be able to entirely escape the tragedy of regimentation, socialism or planning which has humanity by the throat now. It is merely a matter of doing the best we can until the trend turns at some future time, when the tangled skein can be untangled somewhat and sent back to the loom for another effort at fashioning correct patterns of conduct.

Meanwhile, let us save modern medicine from this debacle as far as we can, which is now about to be crucified for its virtues, and make the best adjustment we can with a misguided and uninformed public.

It should not be necessary to give the audience of this paper the history of the progress of medicine for the past century. No branch of endeavor has exceeded our profession in its contributions to the welfare of man. In fact, there could be no progress without these self same contributions and their continued implementation, advancement and control by medical science, using the language in its inclusive sense. But it should be remembered that this has only been possible under a regime and evolution of democracy, and not heretofore has it been threatened by regimentation and wholesale planning. When you take the liberty, competitiveness, initiative and reward of merit away from this and put it under the dominance and control of bureaucracy and socialism you turn the clock back and begin the disintegration of the bed-rock of civilization.

All of this is said with a full awareness of the fact that a state of affairs has come about by which and through which the full resources of modern medicine are not economically available to a large percentage of our population. To undertake to place the blame for this state of affairs is a gratuitous task which would provoke confusing controversy. Perhaps the principle of mutuality invades all human affairs, and modern medicine does not wish to deny its measure of responsibility. But the common denominator of the public now is to proceed to kill the goose that laid the golden egg. Or, more subtly stated, the public says let us promptly compel this profession by legislative enactment to deliver the fruits of its labors to us on our own terms and no longer give it an option as to how it shall conduct its affairs.

The encyclopedic article in the December 1944 issue of Fortune Magazine entitled U. S. Medicine in Transition (one hundred reprints of which were presented to me and distributed to Alabama physicians) begins with the provocative statement that "The state of medicine in the U. S. is a social problem because the country's conscience has made it so." Assuredly! But do not be misled by an implication of impulse. The whole of life "is a social problem because the country's conscience has made it so." In fact, this law was clearly enunciated in the interview Cain had in the beginning. But let us use our language carefully and correctly. This does not mean that man should be socialized

Chairman of the Association's Postwar Planning Commission.

or arbitrarily inducted into a compulsory social security. Man is not "his brother's keeper" under such a regime, but his brother's master, which is quite a different matter. It does mean that the intellectual and moral resources of man should so engineer the endowments of this earth and the advances of science that all men shall have an equal opportunity and be protected from the unpredictable and controllable adversities in a manner which does not require the surrender of his liberty, or freedom, or dignity or manhood in return. Some of these words have been so punished by propaganda that it is well to use them in one sentence to save the point. "Liberty" and "freedom" cannot stand alone any more.

With this brevity we reach the crux of the matter: which is, that we make the resources of modern medicine available to all through the integration of democratic processes without the surrender of competitiveness, free enterprise or reward for merit. This we have undertaken to do in our Alabama blueprint now in formation. The factors involved are: some type of medical center or hospital available everywhere for both physician and patient: that this facility be affiliated with larger centers of hospital and personnel for major work and appeal cases: that a system be devised by which the public may obtain these advantages.

The hospital bill which the profession of our state has written embraces these features. The strategy involved is to provide them with the minimum initial state and federal control, with some type of amortization which will liberate them and turn them over to local control. "Of all checks on democracy, federation has been the most efficacious and the most congenial." (Lord Acton.)

Our profession is in affiliation with our Alabama Hospital Service Corporation in an effort to work out a prepayment insurance plan by which as much coverage as may be thought feasible at this time may be extended to our people in this state.

For the economic level which cannot enjoy these optional advantages the resources of the community, state and nation will stand ready through the establishment of previous arrangement, to meet the issue without the embarrassment, pauperization or stigmatization of anyone.

There are some intricacies at the core of this matter that should have more detail for better understanding. For example, there is the modern physician who refuses to leave the urban area or to locate elsewhere, because he would have nowhere to hospitalize his patients nor access to accessories which he has been trained to use in the diagnosis and treatment of disease. Even in the urban districts he is confronted with the "closed" hospital and must turn many of his patients over to others who are no better trained than he. Therefore, he has become a definite and articulate part of the common denominator of the multitude who have determined to make the resources of modern medicine available to them, if they have to socialize it to bring it about. Our proposed Alabama hospital bill meets this difficulty and should stop this wrangle.

When hospital advantages and scientific equipment are achieved for both doctor and patient, the public raises the issue of economics, and statistically sets forth that there are certain types of illness, epidemics and accidents which will bankrupt all but the most prosperous and cripple many of them for a generation. So this group becomes the major percentage of this common denominator referred to. To this vast aggregate the profession says this is not our fault or responsibility, but in our Alabama medical and hospital prepayment insurance bill which we have presented before our legislature we have worked out an optional plan which meets this situation.

At last we are asked what arrangement is to be made for the more or less definite percentage of our people who cannot participate in any prepayment insurance program. Here the profession again wishes attention called to the fact that this percentage is not our responsibility, but we have here, also, worked out a plan by which the situation will be promptly met and without patronage or stigmatization.

Our set-up, therefore, meets every angle of this complex situation and it remains to be seen whether we can do this degree of "planning" and preserve our democracy. It would seem that with careful guardianship we might take this journey into the field of the humanities without unduly jeopardizing the privileges of private citizenship or losing our option of individual conduct. Our lead-

ing proponents in moral philosophy would unhesitatingly tell us it cannot be done without ultimately degenerating into state control or totalitarianism. "When authority presents itself in the guise of organization, it develops charms fascinating enough to convert communities of free people into totalitarian states." (London Times.)

History has never been written by supermen. There have never been any to write it. Germany has proven that there are none today. Facts, therefore, have always been hard to abstract from history. They must be sifted out from propaganda, prejudice, fiction and ignorance. Study the personality complex, the intellectuality, academic and environmental background of the historian first, and you can estimate with fair accuracy what he will leave out and what he will emphasize. But we do know that the effort to recreate man by law and to sustain him on legislative bread has always ended in tragedy. It has been tried many times from the beginning of the record. It will always fail. It has always owed its inception to the aircastles of manipulators and the exploitation of discontent.

This does not mean that we should undertake to proceed without law or without organization. This would mean chaos. Man must have law and order and an established arrangement for preserving and enforcing it. Study our American Bill of Rights, containing only ten articles, and you will see that we have undertaken to do this very thing. But these laws are the fruition of democratic processes enacted for the personal freedom and individual responsibility of man. Without these assets and outside of this sphere there is neither goodness nor badness and stark amorality abounds, which is the gateway to totalitarianism. Should you prefer a euphemism, you might say organized planning, bureaucracy or, if an advanced student, you might choose socialism.

This is the summary of our blueprint:

1. Equipped medical centers or hospitals in each county of the state under local control.

2. All reputable physicians to have the privileges of these institutions on a nonpreferential basis.

3. That the public shall likewise have the privileges of these institutions when represented by reputable physicians.

4. That each of these units, small or large, shall be affiliated with our base hospital.

5. That cases requiring specialists and equipment only found in our base hospital shall be transported to the same.

6. That these county units shall meet the correct standards applicable to the same.

7. That these county units shall have some rotary teaching system established with our four-year medical school by which they will receive instructions from this source pertinent to the advances of medical science and the implementation of the same.

8. That the nursing system in these local units shall be worked out by the various appropriate agencies under the supervision of the Board of Censors.

9. That the principles of number 7 shall apply to the nursing situation and be enlarged to include the proper training of the nurses in the "county units."

10. That our Alabama prepayment insurance law shall be inclusive for hospital and patient.

11. That our Alabama population so economically circumstanced that the prepayment insurance plan is impractical for them shall have the privileges of these medical centers or hospitals and without stigmatism through suitable methods by the county of residence.

12. That while all of these rules, regulations and laws shall fully comply with the established standards pertinent to the matters involved, there shall be no regimentation or compulsion anywhere and compliance shall be optional.

13. Yet these rules are like those of a baseball game, in that they are to be kept and the ruling of the umpire must be complied with, or you will no longer be given participation in the game.

Perhaps never before have we as a people been confronted with public health problems of such magnitude as face us today. Our efforts at solution may influence the destiny of this and other nations beyond the count of time.

In no single endeavor do we have such a clearly written script before us as in the direction of health measures for the control of tuberculosis. Today we are possessed of knowledge which if put into execution would remove from our midst many diseases and areas of potential danger.

One of our most insidious diseases is tuberculosis and to many this disease is considered the number one postwar disease.—*Geiger, New Orleans M. & S. J., May* '45.

A CHALLENGE TO THE MEDICAL PROFESSION

W. HILL McCASLAN, M. D.
Union Springs, Alabama

American medicine today stands at the cross roads. Whether medicine shall come under bureaucratic control, with its incident loss of initiative and lowering of standards, or whether the high Hippocratic ideal shall be maintained depends largely upon the medical profession itself. If the doctors of America sit complacently by, as has been their wont, and disregard the demands of the American public for better medical service, medicine as a high profession is doomed. But if, as is indicated in many parts of this country, a progressive and constructive change be made, and better and more adequate medical service be offered to ALL of the American people, a golden era of medicine faces us.

That the American public realizes the medical profession is cognizant of the needs of such changes and is earnestly endeavoring to effect these changes is manifested by the altered viewpoint of members of the Congress of the United States. Six months ago the friends of American medicine in Congress had a fight on their hands to prevent the Murray-Wagner-Dingle bill from reaching the floor of Congress. Today it is conceded by all that this bill, as it now stands, cannot pass. Even Senator Wagner says that he is rewriting the section of his bill which pertains to the practice of medicine.

That Congress is willing to leave the changes to the medical profession is evidenced by the changed attitude of the Pepper subcommittee and by bills, such as S. 191, introduced by Senators Hill and Burton. Senate Bill 191 would allocate federal funds to the various states, on the basis of their relative financial needs, for assistance to the states in constructing and equipping hospitals where such are needed. These men, who have made an intensive study of the medical care situation, realize that the first prerequisite for better medical care is more adequate hospital facilities. These men are willing to sponsor bills to aid the medical profession in furnishing this better medical care to the American people. It is up to the medical profession to administer wisely this responsibility.

Despite the increasing population of the state, the number of physicians in Alabama has shown a steady decline. The population has increased from 2,138,093 in 1910 to 2,832,961 in 1940; but the number of physicians has decreased from 2,242 in 1910 to 1,878 in 1940. While the decrease in the number of physicians has affected the state as a whole, it is in the rural counties where there has been the greatest decline in the number of physicians. In 1920 there were 82 physicians per 100,000 population in the rural counties of Alabama; in 1940 there were 49 per 100,000; now there are 36. In 1940 the number of physicians in the rural counties was less than half of the minimum standard of one physician per 1000 population. The average number of patients served by each doctor in the rural counties of Alabama is 2794; there are five counties with more than 5000 patients per doctor.

The following paragraph is quoted from the Preliminary Report on Health and Medical Care in Alabama by the Alabama State Planning Board in February 1945:

> "Although the decline in rural areas is alarming enough, the figures presented do not take into account another factor which must not be overlooked. This is the fact that communities with equal numbers of physicians do not necessarily have the same facilities for medical care. Many physicians, although still active, may have reached so advanced an age that their service capacity is greatly reduced. The reduction in number of physicians in Alabama is caused by the death of older physicians and *the lack of their replacement by young physicians.* This is demonstrated by the fact that in 1940 and 1941 Alabama, with about two per cent of the United States total population, received only one-third of one per cent of newly licensed physicians whereas the state of New York with ten per cent of total population received 18 per cent of newly licensed physicians."

There are 28 counties in Alabama which have no hospital facilities. The total population of these counties is 787,996. There are 282 doctors serving this number of people, and 122, or 43.3 per cent, are over 65 years of age. The service capacity of the average physician in these counties in 1930 was 80 per cent of that in 1920, and by 1940 this had

Member of the Association's Postwar Planning Commission.

declined to 64 per cent. Thus we can see that there has been a much greater decline in medical service in the rural counties than the actual number of physicians in these counties would indicate.

Statistics show that there has been a marked deterioration in the medical service rendered in the rural counties of Alabama during the past several decades. And we have every reason to anticipate that this downward trend will continue unless we take adequate steps to counteract it.

The two foremost means that can be utilized to give better and more adequate medical service to the people of Alabama are: (1) provide more hospital facilities; (2) offer some form of prepayment medical insurance that will alleviate the great financial burden of unexpected operations or other catastrophic illnesses.

According to information compiled by the American Medical Association there were only three states in the country with fewer than two beds per 1000 population in 1939, and Alabama was one of these. For the country as a whole there were in 1938 only 67 physicians per 100,000 population in counties without general or allied special hospitals (for Alabama there were 49) as contrasted with 157 for counties in which there were 250 beds or more.

A report of the U. S. Public Health Service states that "regardless of the income class of the county, the presence of large numbers of hospital beds reflected more attractive locations for physicians than did the limitation or absence of these facilities. This was especially true of physicians under 45 years of age. . . . Such facilities alone afford attraction for establishing medical practice apart from other factors such as wealth, population expansion and urban character of counties."

The development of a four-year medical school in Alabama will enable more men and women to study and practice medicine in Alabama. A system of hospitals has been suggested which, if carried to completion, will not only furnish more adequate hospital facilities to the people of Alabama but will be a means of inducing more and better trained doctors to locate in rural communities. It will also serve as a basis for making the Medical College of Alabama an outstanding college in the United States.

A central hospital in Birmingham will serve as the nucleus of this hospital system. This hospital will be the main teaching hospital of the medical school, and to it will be referred all cases that require special diagnostic procedures or treatment. Some seven regional hospitals of 200 or more beds located in strategic areas of the state will care for all normal surgical and medical cases of their respective areas. A system of district hospitals and health centers will be established in the various county seats or other towns; the sites of these district hospitals and health centers to be decided by a Bureau of Hospitals, where they will best serve the needs of the greatest number of people. This entire hospital system will operate in close cooperation with the medical school and will serve it as teaching and training units. But, what is of even more importance, they will serve as magnets to attract more and better doctors to the rural areas in which they are located. These district hospitals and health centers will bring hospitalization and laboratory and scientific facilities to rural areas where they are now nonexistent.

It is for the construction, equipping and maintenance of hospitals such as these outlined above that the monies appropriated through S. 191 will be used. A bill similar in purport to S. 191 has been introduced in the current session of the Alabama Legislature. Every doctor in Alabama should urge his Senator and Representative to support and vote for this bill.

Surgical operations, obstetrical services and prolonged illnesses constitute three of the main items of large financial outlays for medical care. It is proposed that the Hospital Service Corporation of Alabama extend its services to offer prepayment medical insurance for operations and obstetrical care. This program should have the active cooperation of all physicians in Alabama.

Some changes in the practice of medicine are inevitable. It is to the interest of the American people and to the medical profession that a system be developed that will not interfere with the personal, private patient relationship to his doctor. If medicine were completely socialized we would retrogress many years in medical advancement in this country. But the time is here when states and local units of government must accept their responsibility and do something

to help offer better and more adequate medical care to the people so as to avoid the complete federalization of medicine. When we realize that bills introduced to make some kind of change in medical practice are now pending in 46 states that fact alone should indicate that some changes must be made.

Alabama ranks at the top in its public health program; it has served as a model in many countries of the world. But, in the medical care of its people, Alabama ranks at or near the bottom. This is a challenge to the medical profession of Alabama. Shall we sit complacently by and have complete socialization of medicine thrust upon us? Or, shall we bestir ourselves and present a plan for better medical care and more adequate hospital facilities for the people of Alabama that may well serve as a model for the entire country?

A STUDY OF 838 INMATES OF THE PARTLOW STATE SCHOOL

WITH PARTICULAR REFERENCE TO TRAINING AND PAROLE

R. C. PARTLOW, M. D.
Tuscaloosa, Alabama

Those who care for and try to teach and train the aments or mentally deficient persons are confronted with the fact that they cannot create in them stronger minds, but in many cases they can be trained to use to better advantage the limited mental capacity they already have. Here in the Partlow State School all are trained to the degree that they are able to take training, even though they can be taught nothing more than to improve their habits as to toilet and to the simplest procedures. Many of the lower grades will always be problems of care taking, and a considerable number of the higher grades of the delinquent type will be incorrigible and behavior problems requiring continuous institutional care. Many of the feeble-minded, however, are good, trustworthy and industrious. It is this group that I wish to discuss in such a manner that the paper will be of interest to the general public or laity as well as to the medical profession, and particularly to the welfare workers of the state.

In the last year I have treated and observed the boys and girls of the State School for Feeble-Minded. During that time I have been greatly impressed with the fact that many of them are good, willing workers and that their conduct is of high standard. These good results have been attained in this State School for Feeble-Minded just as they have been accomplished in other well regulated institutions. Mentally deficient persons do far less thinking for themselves than normal people so we have to rely upon steady routine, much repetition, group life in the institution, and kind discipline to develop regular, good habits. The daily program drills them in personal hygiene, cleanliness, self-control, obedience, industry, thrift and moral behavior. Desirable social behavior is built up by this daily training and supervision and such behavior and habits tend to follow them throughout life, particularly if they have proper supervision, encouragement and environment. Such academic instruction as each child is able to take is given in school classes, but of much more importance is the occupational training given them. As they cannot do as well as we would like with their minds, it makes it the more important that they learn to do well some useful things with their hands. The boys and girls learn to do these things of great usefulness to themselves and to the institution by actually doing them for considerable periods of time under supervision. The boys get valuable training as helpers in construction work, carpentry, electric department, plumbing, powerhouse, keeping the lawn, painting and other maintenance work of the institution but the most important training they get is in agriculture and dairy work. Several miles separated from the main institution, a large farm colony with a dairy is maintained and furnishes a great outlet for manpower as well as giving abundant training, happiness and contentment to one hundred and sixty boys. This colony also furnishes a great amount of farm, garden and dairy products as well as large money crops. The girls receive their occupational training in classes in sewing, rug-making, crocheting, house-

keeping, practical nursing the sick and lower grades, kitchen, bakery and laundry work. It has been only during the last year that the girls have done any farm work, and it is found that those carefully selected and supervised, doing suitable field work such as picking cotton, make one of the happiest groups of girls. Last year I had a carefully chosen group of about twenty girls kept well supervised while picking cotton and doing some other suitable work and was delighted myself to see how happy it made them to earn almost a thousand dollars of their own money in a very short time. They, too, spent it wisely, getting dresses, cosmetics and other useful things which added greatly to their happiness. Such cannot be done, particularly with girls, without the strictest supervision by trained attendants and supervisors. All this and many more details are necessary in the proper training of the mentally deficient, and in our school this training has to be done by an extremely limited personnel.

Colonies for girls, particularly domestic service colonies as are maintained by some institutions for mental deficients, have been considered but they are not very practicable to begin for the duration for obvious reasons. Girls' colonies have to be under the strictest care of the most appropriate matrons and supervisors and it would be impossible to secure such supervision now even if suitable buildings and equipment could be obtained. That may be for postwar planning. Colonies are thought of as means of final training, expansion of the institution and as a stepping stone to parole.

During recent months a study of the population of the School has been made to complete some work as to heredity and to ascertain the number who could go out on parole.

Any discussion of heredity as a cause of mental deficiency would be a digression in this paper except for the fact that most of those who are considered for parole are of the primary endogenous or hereditary type of amentia and should not leave the institution having the ability to reproduce others of their kind. Secondary amentia is that caused by environment, and environment is considered as beginning just after the ovum is fertilized as inheritance then ceases. It is thought, too, that both heredity and environment play a part in causing some amentia. About 80 per cent are primary or hereditary and the other 20 per cent secondary. The causative factors in the approximate 20 per cent of secondary amentia are those acting in utero, those occurring at birth—injuries—and those factors which act adversely in the normal development of the mind from birth until development of the mind is complete. It is thought that secondary amentia is not transmitted to posterity as there is no involvement of the germ cells. No known cause can be ascribed to about one per cent.

Some interesting facts concerning the inmates of the School and their parents have been obtained. The information, in tables to follow, concerning the ancestry is obtained from a study of the histories given principally by the efficient welfare workers over the state but the data concerning the number in families come by actual count of parents, brothers and sisters in the institution. Very little comment is necessary but it is an impressive thing at a family party or gathering, given for the happiness of those related, to see present 177 brothers, sisters, fathers and mothers.

On February 13, 1945 there had been 1634 admissions to the School. Histories of the parents of these admissions show in the parents the following abnormalities:

TABLE I
HISTORIES OF PARENTS OF ADMISSIONS

One feeble-minded parent	318
Two feeble-minded parents	235
Either parent in Bryce Hospital or other hospital for the insane	87
Either parent in penitentiary	15
Alcoholism in parents	136
Syphilis in parents	46
Family histories unknown	205

TABLE II
FAMILIES IN THE INSTITUTION FEBRUARY 13, 1945

One family of	6
Two families of	5
Seven families of	4
Ten families of	3
Fifty families of	2
Total number of families	70
Total number of relatives	177

At the beginning of this paper mention was made of that group of feeble-minded boys and girls who are good, dependable and industrious, particularly after proper training. A careful study of the population of the School to learn something of the number of higher grades who might go out reveals the information given in the following short table:

TABLE III
POSSIBILITY OF PAROLE

	Males	Females	Total
Population of February 13, 1945	405	433	838
Too low mentally or too delinquent for parole and self-support	357	377	734
Parolable if sterile with fair chance of self-support with supervision	48	56	104

These forty-eight boys and fifty-six girls have received maximum benefit from training in the School or they have had sufficient training to go out and make their own support if they are ever to do so. That does not mean that they can do that alone but it is absolutely necessary for them to have intelligent, constant supervision and encouragement and proper environment. Having horrible environment and very little or no training were the causes of hospitalization of a great number of them and to return them to improper environment would be disastrous. Of course, one reason for hesitation in their release is their fertility and tendency to have large families of feeble-minded children. They, too, would be unable mentally and financially to give these children proper environment and training, so another generation would become wards of the state. With birth control and proper supervision and environment, these 104 boys and girls might go out and make room for other urgent cases and be able also to be self-supporting. They should return to their home counties and to relatives, of course, when practicable. The supervision should be thorough and include the solicitation by social and welfare workers, of the aid and advice of physicians, ministers, teachers, court and law enforcement officers, and any other proper organizations and persons who would take a personal interest so that the boy or girl would have someone to go to for advice and encouragement. Such solicitation of aid by others is necessary and advisable, even if adequate number of welfare workers can be maintained in each county or community, to guarantee proper guidance to those who go out on trial and to see to it that they have the proper environment.

Parole or furlough of a mentally deficient person is a most responsible procedure and must have the most serious consideration, both as to the personal traits of the individual and as to the environment, care and supervision he or she is to have after leaving the institution. Many of them become delinquent and come to institutions because of their unfavorable environment and lack of training. Even after a considerable period of proper training, a boy or girl has almost no chance of making social adjustment if returned to such bad home environment. Much depends on the well organized and constant supervision and encouragement given them by welfare workers and by other responsible citizens of the community whose interest and efforts at supervision have been solicited by the tireless workers of the welfare departments. The important thing is to help them to adjust instead of having to be brought to an institution or to return after furlough.

One of the greatest causative factors in the prevailing moral misbehavior and delinquency of young people, both the feeble-minded and those who would be normal, is the lack of family and parental guidance and too much dependence on correction of such evils in a collective way. Of course, after such appalling results have occurred from lack of proper guidance of feeble-minded children, organized aid has to take the situation in hand and in many cases institutionalization is necessary, but every effort should be made to get social adjustment first and admission to the School when all other efforts fail. It is most interesting and gratifying to find what can be done with some boys and girls who come in by gaining their confidence, giving them plenty of recreation, entertainment, occupation and other outlets for their energy that has been misspent. Many of them soon cease to be such behavior problems and will take interest promptly in training for something useful, which is merely a beginning but is a step toward ultimate successful parole.

Because the gastroscopic study is disappointing in localizing the source of obscure bleeding from the upper gastro-intestinal tract, I fear that many men have concluded that gastroscopy is only a "stunt" and have lost faith in it. However, a group of us continued its use on our own cases and from others we begged and borrowed patients with known gastric carcinomata, with roentgenologically proved gastric ulcers, with presumably benign gastric adenomata, and with undiagnosed gastric disease so that we might learn the gastroscopic appearance of lesions which we knew to be present.—*Howard, South. M. J., May* '45.

Carcinoma of the Vulva—Treatment of carcinoma of the vulva should be dependent on the type of lesion and its location, as well as upon its degree of involvement, and individualism of treatment offers much more than does any set routine procedure. Certainly, early treatment offers more chance of cure than does late treatment and adequate excision plus destruction of avenues of spread gives more hope of cure than does palliative treatment. Some type of radical or semiradical vulvectomy with excision of the inguinal and femoral glands offers a chance to cure especially in the squamous cell group of cancers.

McKelvey and McLennan, of the University of Minnesota, presented a study of 40 cases treated by various combinations of vulvectomy, with or without gland excision, and with or without radiation therapy as supplementary treatment. They concluded that the location and amount of involvement of structure gave a good index as to the more or less radical handling of the case, indicating that the more radical intra-abdominal excision of structures carries a higher risk to these elderly patients than is justified by the chance of cure. They stressed the importance of bilateral resection of both the vulva and bilateral excision of the inguinal and femoral glands with radiation of those that showed evidence of glandular involvement. They showed in their series that differentiated tumors tend to remain localized a relatively long time before the spread from the superficial and deep inguinal to the femoral and iliac vessels.

It is almost universally accepted that vulvectomy should be done in two stages. Stage one consists of radical removal of the labia and structures of the prepubic region on both sides. The incision necessarily will vary considerably with the type and location of the lesion, but it might be stated that it should include normal skin surrounding the lesion and that the skin should be considerably undermined bilaterally to remove all of the deep lymphatic bearing structures. Bleeding must be carefully controlled. It is not advisable to go too close to the external urinary meatus because this will interfere with urination after scar tissue has retracted. An indwelling catheter is placed in the bladder for a few days after the operation. Relaxing incisions are usually needed to close the wound without too much tension. Ten days or two weeks should be allowed for complete healing of the vulval incision before the second stage is begun, and it is desirable to use the perineal heat lamp frequently during the convalescence following the first stage of the operation.

After the vulval incision has thoroughly healed and is dry, the second stage of the operation is done. Inguinal incisions are made slightly above the inguinal ligaments and crossing them about the middle. It is important, in avoiding infection, not to allow the inguinal incisions to come in contact with the first incision. All of the superficial node-bearing fat is removed and the deep fascia is thoroughly cleaned in the regions of the inguinal nodes and also about the femoral ring. The inguinal canal is then opened, as in a hernial incision, and the fat and nodes are removed from the canal. This may require partial excision of the round ligaments. The femoral canal is then investigated and cleaned. If necessary to accomplish this, the inguinal ligament may be divided in order to thoroughly reach the femoral canal and clean it. The inguinal ligament is then sutured together, the internal oblique muscle and conjoined tendon are sutured to the inguinal ligament and the external oblique is closed by overlapping such as in hernial repair.—*English and Hunt, Texas State J. Med., May* '45.

Heart-Vascular Aging—The care of the aged person is not always a simple procedure, as it is hard for some of them to practice self-preservation; the older person must slow down and minimize his physical activities, he must not drive himself, and he must be restrained to quietude and calmness. The doctor must caution the older man or woman. He or she must have ample rest and notably rest after meals when the splanchnic area is engaged. The coronary circulation is increased after eating and a large per cent of coronary accidents occur shortly after eating a large meal. Of course, it must be forcibly fixed in the mind of the patient who has angina or anginal discomfort that any physical or psychical effort that he makes which brings on the pain should be discontinued and that this pain is a warning signal which must not be disregarded. The nightly rest in bed should not be longer than eight hours. The dynamics of circulation, when a patient is in the supine position over a long period of time, are unfavorably altered so that eight hours in bed should be the maximum at any one time, the need for sleep being compensated by a nap after meals or in the middle of the day. In regard to rest, it should not be forgotten that both physical and psychical rest are very necessary. Emotional excitement should be avoided; anger is as harmful to the blood vessels as any other one thing. The man who is getting older should have some exercise, but it should not be the exercise that he has undergone or indulged in when he was younger. Prolonged auto trips, hard shooting expeditions and long golf games should be abolished and there should be substituted shorter trips, fishing or a few holes of golf. Retirement from active business is bad, unless a man has an avocation which can supplant his vocation. All doctors are familiar with the man who stops work and then disintegrates and degenerates with a rapidity which is almost unbelievable. The older person should be advised to reduce his total food intake: not to worry about the quality of the food as much as the quantity.—*Byrd, J. M. A. Georgia, April* '45.

"Tuberculosis is an infectious contagious disease. Fundamentally its control depends upon the control of the tuberculous patient who may spread the disease to those about him. For that purpose it is vital to know who has tuberculosis and to employ means to find the unknown cases in the community."

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THE USE OF DEMEROL IN ARTHRITIS

"With the exception of salicylates for the polyarthritis of rheumatic fever and colchicine for gout, which are more or less specific for these conditions, the treatment of the chronic pain of arthritis has always been a difficult problem. It is admitted that the commonly used analgesics, such as salicylates and amidopyrine, have some value in the mild form of arthralgias or decrease to some extent the discomfort of chronic pain, but their potency is such that analgesia is never prolonged or complete. Too often the physician must resort to opiates, a practice which unfortunately is not very satisfactory. Of the many disadvantages associated with their use, tolerance and addiction are the most important in limiting their value in the treatment of chronic pain. Fortunately a new synthetic analgesic, Demerol, has been introduced, which approaches the potency of morphine, but possesses an addiction liability much less than any opiate derivative. Furthermore, as far as tolerance is concerned, it has been administered for many weeks or months without necessitating increasing doses to achieve the same analgesic effect. These advantages over morphine have been utilized in the treatment of chronic arthritic pain, the result of which study is the subject of this report."

Thus does Batterman[1] open his discussion of this new drug. Since 1941 he has treated with Demerol 183 patients whose arthritis required hospitalization and 73 ambulatory arthritics. The Demerol has been given both orally and parenterally. And the New York investigator tells us that "regardless of diagnosis, severity of pain, or dose, Demerol administered parenterally resulted in satisfactory analgesia in approximately 83 per cent of the trials and an additional 13 per cent had moderate relief of pain. . . . In spite of prolonged administration in many instances for weeks and months, the same result was achieved as long as the medication was given at regular intervals."

"Excellent results were obtained in alleviating the pain of the sciatic syndrome regardless of causation. Similar effects were noted in patients with myositis, acute bursitis, advanced osteoarthritis, rheumatoid, gonococcal and nonspecific infectious arthritis. Particularly striking was the relief of secondary muscle spasm and increased mobility of the joint following prolonged administraton of Demerol."

And we read that "the treatment of the ambulatory patient is complicated by the fact that a high percentage of such patients experience unpleasant side reactions. Since these may take the form of dizziness, nausea, vomiting and, rarely, syncope, it is very difficult in certain individuals to obtain a satisfactory response."

And in the last paragraph we read that "in conclusion, although insufficient cases are available for a statistical survey of the effectiveness of Demerol in any specific arthritic condition, it is apparent that the drug is of definite value in the treatment of chronic pain associated with arthritis. Hospitalized patients respond to a degree comparable to the effects expected with morphine. However, the dangers of addiction are minimal and the incidence of side reactions is much lower. Ambulatory patients can also be treated satisfactorily if the dose is determined individually for each patient and time is allowed for untoward reactions, if any, to subside."

1. Batterman, Robert C.: The Treatment of Arthritic Pain With Demerol, a New Synthetic Analgesic, Ann. Int. Med. 22: 382, March 1945.

Few conditions are more trying and taxing to both patient and physician than chronic arthritis and any new therapeutic agent that promises to give some degree of relief will be welcome; not only to arthritics but to victims of cancer and others so unfortunate as to suffer from painful and lengthy illness. Dilaudid, pantopon and the barbiturates have found places for themselves. It is quite possible that Demerol may do likewise.

THE HOSPITAL CONSTRUCTION BILL

INFORMATION ABOUT SENATE BILL 191

Reprinted from Hospitals, the Journal of the American Hospital Association.

A bill outlining a broad program of grants-in-aid to the states to assist in the construction of hospital and public health centers was introduced in the United States Senate on January 10 jointly by Lister Hill of Alabama and Harold H. Burton of Ohio.

This bill carries the general approval of officers of the American Hospital Association, American Protestant Hospital Association, and Catholic Hospital Association and provides a program which will be administered by state authorities under standards recommended by the United States Public Health Service with the approval of a joint advisory council.

Nonprofit and other public hospitals would be eligible to participate in the program, provided the individual project complies with the state survey recommendations which is approved by the federal advisory council. The bill calls for statewide surveys to determine the need for hospitals and public health centers and would tie in any new construction assisted by federal funds to a general pattern in order to effect a system of coordinated hospital services.

In introducing the bill Senator Hill stated that "while the major construction would not be undertaken until war conditions permit, it is important for the states and territories to proceed promptly in developing their plans for needed hospital facilities." Carefully planned future development of our hospital system would certainly be a marked advance over the unplanned haphazard growth that has been general heretofore.

The House of Delegates of the American Hospital Association, at Buffalo in 1943, outlined as the program of the Association three major points: (1) the need for federal grants-in-aid for hospital construction, (2) the need for federal aid for hospital care for indigent patients, and (3) active support for further coverage of the employed population under the Blue Cross hospital service plans.

The House of Delegates, at Cleveland in 1944, added to these points: (4) the need for the maintenance of the values of the voluntary hospital system, and (5) the importance of rural-urban hospital coordination.

The Committee on Governmental Aid for Postwar Construction of the Council on Government Relations, under the chairmanship of John N. Hatfield, made a survey of the present need for hospital construction. This survey, as of a year ago, indicated that on the basis of present needs 180,626 hospital beds should be constructed and at an estimated cost of $1,193,133,985.

This committee was originally created to study the possibility of nongovernment hospitals participating in any federal public works program. It was hoped that experience in the various programs in effect in the 1930's, which largely benefited public hospitals, might be broadened to include all types of nonprofit hospitals. The findings of this committee clearly indicated that many voluntary hospitals were contemplating construction and that federal assistance under a public works program would do much to advance their plans for better hospital care.

Every proposal for continuation of full employment after the war indicates the need for a public works building program to be put into effect when private industry cannot maintain the needed level of employment. Hospitals and health centers are mentioned as capital assets that are worthy of the investment of public funds. However, an unplanned program of building hospitals could damage rather than improve the distribution of hospital service.

The Commission on Hospital Care inaugurated by the American Hospital Association, under the chairmanship of Thomas S. Gates and with Dr. A. C. Bachmeyer as director of study, was organized in the late summer of 1944. Formation of this commission was the result of a conviction on the part of this Association that there was great

need for an objective study of present hospital resources and a careful formulation of minimum standards required, in order to assure reasonable hospital care to all the people of the country. The commission, correlating state studies across the country, is at the same time working on the definition of standards that will be available to states which have inventoried their hospital resources and wish to bring them up to standard.

The unfortunate plight of the small community hospital has been obvious to all who have had an opportunity to study the experience of such institutions. It is clearly indicated that such small hospitals, if they are to render adequate care, must be intimately concerned with the public health activities in their community and must be affiliated with larger hospitals for administrative and professional assistance.

Such as interrelationship has been recommended in Britain and will be carefully studied by the Commission on Hospital Care. In numbers the small community hospital occupies an important place in the present hospital system. Farm leaders studying the health problem stress the need for the development of small community hospitals which facilitate good hospital and medical service for the rural population.

The action by the House of Delegates urging government assistance for hospital construction, the studies of the Committee on Governmental Aid for Postwar Construction, the experience of the Commission on Hospital Care, the likelihood of a postwar public works building program, and the demand for a pattern for the development of small hospitals and health centers have all affected the thinking of the American Hospital Association and are all factors which have been taken into consideration in Senate Bill 191 introduced by Senators Hill and Burton.

The bill as drafted provides broad opportunity for each state to develop its own program for hospital and health center construction. The program in each state will be successful only insofar as those concerned with health matters actively support the survey of needs and the planning of an integrated program in that state. However, it is the concensus of most members of the Association that this strong centering of authority in the state is proper. All those participating in the care of patients in hospitals must have an opportunity to understand and thus to assist in the development of an improved program.

The study features of the bill are important. The opportunity of the state to secure financial assistance in putting into effect the recommendations growing out of a state survey is an important incentive for a detailed and careful analysis of the state's problems. The financial assistance is varied, the more wealthy state receiving a smaller percentage of federal assistance than the poorer state. Such an equalization may well meet with resistance. However, hospital people will realize that the present hospital system will be criticized on the basis of the lowest level of performance and that hospital care must be improved in the poorer states to an extent which can be done only through federal assistance.

The Federal Advisory Council, consisting largely of those with experience in the planning and operation of hospitals, becomes a partner of the Surgeon General in the administration of this act. This Council approves the standards recommended to the individual state for both the survey and for grants for construction. In addition, this council jointly approves with the Surgeon General the actual plan developed by the state survey.

The $1,000,000,000 figure, it should be clear, is an authorization to appropriate, not an appropriation. The money probably will not be appropriated in full during the first year, for no construction can start until state surveys are completed. A few states are well along with such surveys. Others may require one to two years for completion of a satisfactory study. Congress is authorized after the initial year to increase the appropriation for construction, should that be indicated. Undoubtedly Congress would hesitate to appropriate funds for a large amount of construction prior to the termination of the war, and certainly the amount of appropriation should be in proportion to the need for federal spending to support, through a public works program, the transition to peacetime industrial activity.

The Hill-Burton Bill may be criticized by some as being inadequate. It provides no federal funds for operation of a hospital

when local funds are lacking. It is a first step toward correcting present deficiencies. Surveys of need by states and the construction of facilities are a preliminary to any better distribution of hospital care. The survey and construction bill would be more effective were there federal legislation providing for grants-in-aid for indigents. Resources from such a program would tend to channel funds into those areas where the population is at such a low income level as to be unable to contribute anything toward the cost of illness.

Improved hospital facilities alone have in the past attracted more physicians to an area. Assistance for indigent patients and increased enrollment under Blue Cross and medical prepayment plans of the employed population, including those in rural communities, would further attract professional personnel to those areas now inadequately supplied. Surveys of need and hospital construction would seem to be a preliminary to any improvement in the distribution of hospital care.

The Hill-Burton Bill is an opportunity for all who are interested in health services to support a program on which all are agreed. The provision of adequate facilities cannot be accomplished over night. The controversial aspects of changes recommended in the present system of distributing hospital and medical care can be debated while this work is going forward.

AN EXAMINATION OF S. 191

Reprinted from Hospitals, the Journal of the American Hospital Association.

The background information that prompts the interest of the hospital associations in the Hill-Burton Bill and features of the bill itself were outlined in the February issue of *Hospitals*. For the further information of hospitals and the public, the following questions and answers in regard to this bill have been prepared:

Q. When this bill is passed, how would a hospital wishing to secure a federal grant apply, and what requirements must be met?

A. The hospital would file an application for a project with the state agency administering this plan when the bill is passed. The state agency would consider the application to determine whether or not the project was in accord with the recommended state plan for providing hospital care for all of the people of the state.

After approval by the state agency the project application would be submitted to the Surgeon General of the U. S. Public Health Service and would be required to meet certain standards established with the advice and approval of the Federal Advisory Council. It would be necessary for the state to match the federal funds alloted to it with state, county or municipal funds—or in the case of the nonprofit hospital—with private funds.

Q. How would the individual hospital know whether its project was one of those approved?

A. The survey of over-all hospital needs in the state would have to be complete, including an ordering of all proposed construction setting forth the relative need of each project. The individual hospital application would have to be among the most needed projects.

In any given year only so many projects could receive federal assistance as the total federal allotment would permit. For example, the most needed hospital construction in the state may consist of 10 projects requiring all the federal funds allocated to that state for the first year. If the individual hospital applying for federal funds were not in the first 10, the application would have to be held over (if federal funds were to be granted) until the project was reached in the order of relative need for the individual state.

Q. What state agency would make the state survey and approve projects for construction?

A. Senate Bill 191 does not specify the state agency. In many states a state agency has already been created or designated to study hospital needs. Such an agency may be a governor's appointed commission, a subcommittee of the state planning commission, a commission created by the state legislature, or an existing agency such as the state department of health.

If the individual state legislature wished to make such a commission the permanent agency for hospital planning and administration in the state it could, through enabling

legislation, designate such an agency for the approval of construction grants.

For the state study the state agency would have to have an advisory council representing "non-government organizations or groups and state agencies concerned with the operation, construction or utilization of hospitals."

Q. Why would there have to be a state plan, and what would happen if a state did not prepare an over-all plan?

A. When Senate Bill 191 is passed, it will provide that funds for construction be granted only where a state plan has been developed which will "in conjunction with existing facilities afford the necessary physical facilities for furnishing adequate hospital, clinic, and similar services to all of the people."

If a state did not make a thorough survey of need and did not prepare a program approved by the Surgeon General and Federal Advisory Council, that state would not have a federal grant of funds for construction.

Q. Who would decide which hospital construction is needed most in the state?

A. The state agency designated to make the hospital survey. This agency would be required to have an advisory committee. However, the authority of the advisory committee would be dependent upon how that agency was created in each state.

Q. Would it be possible for a state agency to make the survey and to administer the construction features without advice by an advisory council?

A. The state would be required to have the advice of a council in making the survey. How much attention would be paid to that council is largely dependent on state enabling legislation.

Q. What would be the responsibilities of the Surgeon General of the U. S. Public Health Service under this bill?

A. The Surgeon General would be charged with responsibility for establishing standards for studies, for state plans and for approving grants for specific projects. In all his administrative activities, it would be necessary for the Surgeon General to have the approval of the Federal Advisory Council. With this council he would have responsibility for seeing that state plans were properly formulated and would provide reasonable hospital service to the people of the state.

Q. Who would serve on the Federal Advisory Council. and who would appoint that council?

A. The council would be appointed by the Federal Security Administrator. The bill provides that the membership of the Federal Advisory Council shall be eight persons "who are outstanding in fields pertaining to hospital and health activities. and a majority of them shall be authorities in matters relating to the operation of hospitals."

Q. Could the Surgeon General ignore the advice of the Federal Advisory Council?

A. No. The bill specifically states that in establishing standards and in approving plans and in other decisions based on judgment by the Surgeon General, such decisions shall have the approval of the Federal Advisory Council.

Q. How would federal funds be divided among the different states?

A. The total appropriation which Congress could make in any year as authorized in this bill would be divided between the states on the basis of the population in each state, the relative wealth, and on special needs for hospital construction. The regulations controlling this division would have to be approved by the Federal Advisory Council and, if possible, by the representatives of all the state agencies.

Having divided the appropriation among the states on the above basis, the percentage which each state would have to match would vary between 25 per cent and 75 per cent on the basis of the wealth of each state—the poorest state being required to match only 25 per cent of the federal funds, with the wealthiest state required to match 75 per cent.

Q. Could any hospital share in the funds?

A. Only public hospitals and nonprofit hospitals could be granted federal funds.

Q. Some states cannot by constitution or statute pay funds to denominational hospitals. Does this mean that such hospitals could not participate?

A. No. The law provides that where there is such a state limitation the funds could be paid directly by the federal government to the applying hospital after the hospital's ap-

plication was approved by the state agency within the state plan and had met the standards set by the Surgeon General. Such a grant directly to a hospital would count as part of the allotment to the state.

Q. What assurance would the hospital association have that the state agency in any state will make a good plan?

A. This would be primarily a matter of local responsibility. The law would specifically put a great deal of authority in the individual state. The value of any plan would be largely dependent on the active participation of state hospital associations, medical societies and others who are interested in better hospital care.

There would be protection in the law in the authority granted the Surgeon General and the Federal Advisory Council to withhold grants where a state does not prepare an adequate plan.

Q. Would too much authority be granted to the Surgeon General of the United States Public Health Service?

A. Since it is federal funds that are to be granted and since the aim of the bill is an adequate hospital system for all of the people of the country, there obviously must be some assurance given Congress that the funds would be spent to further the aims of the legislation. In drawing up the bill an effort was made to avoid the possibilities of political pressure influencing the judgment of the Surgeon General.

Important decisions such as the establishing standards, the allotment of funds to states, and the approval of state plans are to be a joint responsibility of the Surgeon General and the Federal Advisory Council.

Q. Some states have started hospital surveys. Will this prove to be an advantage?

A. Yes. The bill is so drawn that if a state study commission has been created it could become the state study agency under the bill. The study and the final report would have to meet the standards set by the Surgeon General and the Federal Advisory Council.

Where the present state survey has not completely covered the problems, additional study would be necessary. However, much of the work in such states would not need to be duplicated, and it would be assumed that states which have initiated studies would be able to have an over-all state plan approved at a much earlier date and thus be ready at an earlier date for the approval of grants for construction.

Q. Would money for administrative expenses for state surveys be available immediately on the passage of the bill?

A. No. The bill itself does not actually appropriate any funds. It would only authorize Congress to appropriate funds. Congress might well appropriate funds for surveys shortly after passage of the bill.

Q. Would money be available to a hospital wishing to construct a wing for mental patients?

A. Yes. The term "hospital" would be defined to include public health centers and general, tuberculosis, mental, chronic disease, and other types of hospitals, as well as related facilities, such as laboratories, outpatient departments, nurses' homes and training facilities, and central service facilities operated in conjunction with hospitals. Such hospitals could be independent units or an addition to an existing hospital.

Q. How much money would be appropriated under the act for construction?

A. No money would be appropriated under the act. Passage of Senate Bill 191 would provide authority for the appropriation of $100,000,000 of federal funds for hospital construction in the first year, and any sum which Congress may decide in future years. The amount of the appropriation in the first year and thereafter would be decided by the Congress.

Q. Why should federal money be spent for hospital construction? Many states have surpluses at the present time.

A. When the bill is passed, Congress would bear this point in mind in appropriating money.

The federal government is planning full employment after the war. Every plan aimed at full employment implies that at certain times it will be necessary to have public work programs financed through public funds. Hospitals and health centers are always mentioned as a wise inclusion in a public works building program. However, unless hospitals are built in accordance with properly established need and under an over-all program planned to meet the needs of all the people, such building can be not only of

much less value but could actually be damaging to the present hospital system.

The authority provided in the bill for a federal grant of funds for construction would give point to the survey feature of the bill that provides that the states must inventory their present hospital resources and outline their needs. Undoubtedly needed construction will require investment of state funds for mental hospitals, tuberculosis hospitals, and other facilities to any extent that state funds are available.

Congress recently authorized $1,500,000,000 for grants for road construction. The Public Roads Authority of the federal government had a complete inventory of the need for roads and this money will be spent for the most needed projects. The survey features of S. 191 will encourage, by offering the incentive of grants-in-aid for construction, an over-all program to meet the hospital needs of the country.

Q. Suppose that in preparing a state plan there are areas of the state where hospitals are needed but there are no funds to support a hospital?

A. The bill proposes that the state plan should outline all hospital construction needed in the state, but under Section 622 (a) (4) it further proposes that the state agency, in setting forth the relative need for individual projects, would provide for construction only "insofar as financial resources are available therefor and for maintenance and operation made possible."

Q. Then, under this bill if an area needed a hospital but there are not funds to support it, no hospital could be built?

A. This is true. This bill provides that such needs would be listed but it would not include funds for maintenance. This situation could be met by state or federal legislation providing funds for the care of the medically needy and could be further assisted by an extension of Blue Cross prepayment plans and prepayment medical plans.

The bill purposely is designed to permit meeting the need for physical facilities and to stimulate all interested in the health needs of the state to inventory resources on a cooperative basis and to determine needs and outline a plan by which all citizens of the state may secure hospital service.

Q. Suppose a state agency were to arbitrarily refuse a project?

A. Conceivably a state agency could make arbitrary judgments. This would have to be controlled by those interested in the development of a hospital system for the individual state. S. 191 would provide, Section 622 (a) (5), that the applicant should be entitled to "an opportunity for hearing before the state agency."

Q. Does the bill include provisions for health centers?

A. Yes. The bill refers to *hospitals* but it defines *hospitals* as including public health centers, and a public health center is defined, Section 631 (d), as "a publicly owned facility for the provision of public health services and medical care, including related facilities such as laboratories, clinics, and administrative offices operated in connection with public health centers."

Q. What assurance would there be that the state or counties and cities would not get all the federal funds?

A. The bill specifically states that nonprofit hospitals could participate. The amount of that participation would depend on the active interest of non-government agencies in developing the plan. The Surgeon General and the Federal Advisory Council would, in approving a state plan, have an opportunity to judge whether the plan properly utilizes all the present hospital resources of the state.

Q. How do the studies of the Commission on Hospital Care, inaugurated by the American Hospital Association, fit into the aims of this bill?

A. The Commission on Hospital Care was appointed and secured grants totalling $105,000 from the W. K. Kellogg Foundation, the Commonwealth Fund, and the National Foundation for Infantile Paralysis to study the hospital resources and needs of the country. The commission is encouraging states to make individual studies which might be combined into a national study.

The Surgeon General of the U. S. Public Health Service is assisting the director of study of the Commission on Hospital Care with personnel and with information which the U. S. Public Health Service has available. The results of the study of the commission will be readily available to the Surgeon General should this act be passed.

Q. Would the approval of a construction project require filling in many forms, and

would passage of the bill create a great deal of federal red tape?

A. Undoubtedly, both in the survey and in applications for projects, the state agency and the Surgeon General of the U. S. Public Health Service would require detailed information and proof that any projects would meet the needs of the people of the state. Both the Surgeon General and the state agencies representing the people would want to be sure that public funds were invested for the purposes provided in this act.

This inevitably would mean careful investigation of projects and if a project were determined not to be within the purposes for which funds were available, there would well be criticism of an applicant with a selfish interest. The approval of grants on the basis of proper judgment could be insured if those who are interested in the development of an over-all plan had the benefit of the study and thinking which would carry forward the preparation of an over-all state plan.

Q. Could hospitals which do not need federal funds go ahead with construction?

A. Yes. There is nothing in the bill which would require a hospital to participate in the program to prevent it from utilizing its own funds. However, if a proper state plan providing hospital service for all of the people of the state is developed, it seems logical that construction even without public funds will want to aim toward meeting unmet needs shown in the state survey.

Q. Would federal funds be available on a pro rata basis for all the costs of construction?

A. The bill defines the term "construction" for which grants are to be made under Section 631 (f) as follows: "The term *construction* includes construction of new buildings, expansion, remodeling, and alteration of existing buildings, initial equipment of any such buildings, and landscaping the site thereof. . . ."

Q. Would all states be eligible for participation?

A. Yes, within the terms of the bill. In other words, they would have to make a survey and have an approved plan. In fact, the word "state" is defined in the bill to include Alaska, Puerto Rico, Hawaii, and the District of Columbia.

FROM SOMEWHERE IN ENGLAND

From somewhere in England, Captain T. B. Hubbard, Jr., writes to his father of his experiences in the 117th General Hospital. No doubt his letter will prove interesting to the doctors of the State.

"Things are slowing up now a very little and we have a new man in to help us on neurosurgery, so I thought I'd take time out to discuss a few of the most striking things one sees over here that you might be interested in.

"In the first place, in 1943, when I was at Fort Dix, they had several wards and a complete service delegated only to 'Septic Surgery' which was mainly osteo of old compound fractures. Today the men are debrided at the Evacuation Hospital, at the most 36 hours after injury, and shipped back to General Hospitals, we by air getting them even in England only 72 hours after injury (so that they can almost tell us in detail of the fighting that is only hitting the papers that day).

"They are started on penicillin and sulfa from the Evacuation Hospital on back and here we are secondarily closing compound fractures (and of course simple soft tissue wounds) 3 to 15 days after injury, and our percentage of breakdown of wounds is close to 1% or less.

"We see the most striking results of good debridement and chemotherapy, as we are the center for combined nerve, plastic and bone cases. The wounds are closed as I say; the limbs put in traction; then when healed put in plaster with windows cut for electrical stimulation of the muscles; 2 to 3 weeks after complete healing (14 days absolute minimum) we repair the nerve, and the bone is plated at the same time if necessary; or perhaps, as in the humerus, if there is much loss of nerve substance, we shorten the humerus 2 inches (maximum) and plate it.

"Likewise the plastic boys, their courage bolstered by chemotherapy (and rightfully so), put abdominal flaps on forearms with bone fragments right in the air, the limb during the taking of the flap being immobilized with Roger Anderson fixation. And their results are phenomenal, largely because Major Kiehm, the plastic man, is very good. Then, after the flap is finished, we repair the nerves.

"The principal credit, as I say, goes to chemotherapy and good evacuation, I believe.

"I am doing an ulnar nerve next week—April 19, that is—who was wounded March 7; I closed his wounds secondarily March 21; and he'll have his nerve sutured within 6 weeks of injury through a clean wound, in the meantime having had good physiotherapy for most of those 6 weeks here at this hospital. So certainly he stands a better chance at nerve recovery than those in the last war who went sometimes a year before nerve repair. Now we feel bad if we repair a nerve more than two and a half months after injury.

"Incidentally, we feel that it is better to explore early, with a chance of finding a satisfactory nerve in about 1/5th of the cases, rather than have the muscles degenerating while you are waiting months to see if nerve regeneration will take place spontaneously.

"As for penicillin, we use it in doses routinely of 20,000 Florey units intramuscularly every 3 to 4 hours for 4 days postoperatively on every nerve case. And sulfadiazine, gm. 1, every 4 hours 24 hours preoperatively and 4 days postoperatively. We use both because we find from cultures of our wounds that about half the bugs are penicillin resistant and the other half sulfa resistant. For acute infections, we use penicillin 40,000 units every 3 hours intramuscularly. These dosages are much above those used in civilian life, from the articles I read. Whether we are overdosing I don't know, but I do know that you reach your maximum concentration in the blood 3 hours after intramuscular injection and it declines rapidly after that.

"The same preoperative and postoperative chemotherapy is used on all these wounds—plastic, osteo, neuro, or general surgery, because so close to injury we feel that they are all potentially infected, certainly when open, and even occasionally when closed."

THE NEED FOR PLANNING THE ECONOMIC REHABILITATION OF THE TUBERCULOUS

Reprinted from Diseases of the Chest, March-April 1944.

A great deal of thinking and planning is being done regarding postwar physical, mental and economic rehabilitation of men and women in the armed services. To the contrary, little or no planning is taking place for the physically handicapped who are serving on the home front despite their physical limitations.

As is well known, there are arrested, apparently arrested, quiescent, and even mildly active tuberculous individuals who are doing their part by taking on war jobs and working long hours in war industries. Some of these people have already relapsed, others will no doubt follow suit and become active cases, and will transmit their disease to their fellow-workers.

The public health aspect of economic rehabilitation of the tuberculous patient has not been given the consideration that it merits by those who are responsible for the control of tuberculosis. Looking back into the history of the problem, one discovers that official agencies have consistently underestimated the significance of rehabilitation; and even today comparatively few public health officials recognize its importance. Thousands of dollars are spent annually to allay symptoms and to check progress of this disease, yet the importance of appropriating funds for the purpose of safeguarding patients from relapse after discharge from the sanatorium is not appreciated.

The economic status of the majority of tuberculous patients is such that immediately after their discharge from the sanatorium they are prematurely compelled to accept full-time employment, which frequently is unsuited to their work capacity. Inevitably such premature, full-time, unsuitable work promotes a reactivation of the disease, leading to infection to the household and other contacts, thus creating a breach in the defenses against its spread in the community.

Those who are interested in the control of tuberculosis must ultimately realize that the supervision of the tuberculous individual must not end with his discharge from the sanatorium. The great number of relapses and the many deaths which occur within a relatively short time after discharge from the sanatorium make one wonder whether much of the good work of the sanatoria and a considerable amount of public funds are not being wasted.

It should be clearly brought home to the responsible agencies that to prevent infection to the workers in industry, to the community in general, and to reduce mortality,

we must prevent relapses; to avoid relapses, it is imperative to provide social and economic security for the tuberculous individual after his discharge from the institution. Such security can in a large measure be achieved if, through the medium of vocational training during convalescence, the patient has been prepared to bridge the gap between the measured pace of sheltered sanatorium life and the accelerated momentum of industrial life.

It is to be hoped that from the many relapses that will unfortunately take place during the period of war, the lesson will be driven home more forcefully that the *economic rehabilitation* of the tuberculous must be a part of any program for the control of tuberculosis. No person can remain physically well if he is not economically rehabilitated to enable him to select the type of work compatible with his physical condition. It should be borne in mind that the economically maladjusted tuberculous individual remains a potential reservoir of infection and therefore a potential menace to the family, the industrial worker and the community at large.

STATE DEPARTMENT OF HEALTH

BUREAU OF ADMINISTRATION

B. F. Austin, M. D.
State Health Officer

HOSPITAL FACILITIES IN ALABAMA

In his visits here and there in the State and in conversations with community leaders, the State Health Officer has frequently been impressed by the inadequacy of hospital facilities in Alabama. We who take such great pride in our State and its accomplishments in many fields have realized for a long time that in the matter of making proper provision for her sick and injured this State's record has not been anything like what it should have been. The stark, rather disturbing truth is that this elementary social obligation is not being properly met. In some communities hospital facilities are altogether lacking. In others it is available, but the existing facilities fall far short of adequacy, suggestive of a child trying to do a man's work. In only a few communities, a very few, are hospital facilities available to the proper extent according to recommended standards.

A hospital survey conducted about five years ago by the State Department of Health revealed that there were 66 general hospitals in the State, exclusive of specialized institutions, hospitals operated by the Federal government and small institutions which were generally regarded as hospitals but would more properly be characterized as physicians' clinics or emergency stations. Those 66 were found to contain 4,067 beds or an average of approximately 1.38 beds per 1,000 population, as compared with an average of 2.7 per 1,000 population for the United States as a whole. Thus Alabama was found to have only half as many hospital beds, according to its population, as the country as a whole.

It is impossible to make an exact estimate of progress made during the past five years in correcting this situation, as no survey of the same kind that was made in 1940 has been made recently. However, the State Planning Board, in cooperation with the Planning Commission of the State Medical Association and the State Department of Health, recently obtained information on all the hospitals in the State, including those which were not counted in 1940 because they had not met the requirements for approval by the Alabama Hospital Association or the American Medical Association. But, including them all—the unapproved, as well as the approved—it was found that Alabama had 83 hospitals in 1945, exclusive of those operated by the Federal government, tuberculosis sanatoria and other institutions devoted to special diseases and conditions. Those 83 were found to have a total of 5,633 beds, giving the people of the State an average of 2.07 hospital beds per 1,000 population. Even on this basis, the Alabama average is less than half that of 4.5 beds per 1,000 population recommended by the American Hospital Association.

To cope with the situation, Senator Lister Hill, of Alabama, recently introduced in

Congress a measure designated as S. 191, while an identical measure, known as H. R. 2498, was introduced a few weeks later in the House by Congressman Mathew M. Neely, of West Virginia. These bills, now awaiting action by those respective Congressional bodies, provide substantial sums in Federal funds for financial assistance to local communities, on a matching basis, for the construction of nonprofit hospitals, health centers, clinics and similar health-protecting agencies and institutions. In order that Alabama communities might receive the fullest possible benefit from the provisions of this impending Federal legislation, a bill has been introduced in the State Legislature to set up the machinery stipulated in the Congressional bill as necessary before a state can obtain any portion of the proposed Federal hospital construction appropriation for any of its communities.

The State measure would authorize the State Board of Health to "acquire, construct, equip, maintain and operate" public hospitals, health centers and related facilities for the treatment of any type of disease. The State Board of Health would also be authorized and required to set up what the lawmakers call "a master hospital plan" by which the State would be divided into regions, districts or zones, such division to be subject to whatever future revisions and changes may be found necessary or advisable.

One of the most important provisions of the measure has to do with the establishment of an advisory council which would be required to approve all policies and regulations necessary for carrying out the objectives of the act. Its membership would consist of three hospital administrators, or persons with broad experience in the administration of hospitals, to be appointed by the Alabama Hospital Association or by the Governor, in the event that the Alabama Hospital Association fails to exercise this privilege; one member to be appointed by the State Board of Censors of the Medical Association of the State of Alabama from among its own membership; four lay members "with broad civic interests representing varied segments of the population," to be appointed by the Governor; the State Health Officer; the State Director of Public Welfare; the Director of the State Planning Board; the Director of Finance and the Attorney General.

The State Board of Health is designated in the measure as the official representative of the State of Alabama for the receipt, handling and disbursement of funds to be made available by the Federal and State governments, philanthropic agencies or other sources to be used in carrying out the objectives of the measure. Authorization is also given for the establishment and maintenance of such additional bureaus or divisions as the State Board of Health may require for the carrying out of the objectives of the bill.

The bill would authorize "any one or more local governing bodies" in any of the regions to be designated by the State Board of Health to call and give publicity to a public meeting at which citizens may express themselves in favor of or in opposition to a proposal to form a hospital association. In accordance with the opinion expressed at that meeting, the governing body or bodies may determine whether such an association shall be formed. If the decision is favorable, an appropriate resolution or ordinance shall be passed and the local governing body shall appoint one member to represent each precinct or ward included within the jurisdiction of that governing body as a director of the association. The directors thereby appointed shall make formal application to the Secretary of State for a certificate of incorporation, supporting the application with certain documentary evidence called for in the bill. The directors shall choose a chairman from their own number and each director shall serve for five years. He may be reappointed by the local governing body responsible for his appointment or may be succeeded at the end of his term by another appointee of the governing body. He is to serve without compensation.

The directors of a hospital association are required to meet annually, and the association must be governed by a constitution and by-laws which have been drawn up by the directors and approved by the State Board of Health. The active direction of the association's affairs is to be made a direct responsibility of an executive committee of not less than five or more than nine members, to be selected by the directors from among their own number. The executive

committee shall meet once a month and carry on the affairs of the association in accordance with its constitution and by-laws and with the laws of the State of Alabama. It is required to appoint a medical advisory committee of from three to five members of the medical staffs of the hospitals in the area to be served by the association, which medical advisory committee would be responsible to the executive committee "for the professional aspects of the hospital's operations subject to the rules and regulations adopted by the State Board of Health."

Thus organized, the hospital association would be empowered to apply to the State Board of Health for authority to enter into a cooperative contract with the Board for the purpose of constructing, maintaining and operating a hospital and to act as the representative and agent of the State Department of Health in the construction and operation of such an institution.

The measure would authorize the local governing bodies of each political subdivision participating in the hospital construction program to appropriate their proper proportions of the cost of constructing, maintaining, equipping and operating such hospital or hospitals as may be determined upon by agreement between the hospital associations' executive committee and the State Board of Health. It also provides that any sums thus appropriated shall be paid into the treasury of the association and shall be paid out under instructions of the associations' executive committee.

Appropriations of $15,000 a year for each of the fiscal years 1945-46 and 1946-47 are included in the bill, these sums to be made available "for administration, engineering, architectural or other services and functions necessary for carrying out the provisions of this Act."

The Hill-Neely bill carries an appropriation of $5,000,000 to be made available to the individual states to enable them to make a thorough-going inventory of their existing hospitals, so as to determine their needs under the proposed hospital construction program and to comply with the other requirements for participation in the program. There is an additional appropriation of $100,000,000 for the fiscal year ending June 30, 1946, which sum, if the measure becomes law, will be available for distribution to State health departments for aid in the construction and maintenance of local hospitals to be built and operated under this program. Federal financial participation may not be less than 25 per cent nor more than 75 per cent of the total cost, a particular state's actual percentage being determined by its financial needs. Other Federal appropriations are to be made available for future operation of the program. For the State's contribution, the State Building Commission will be asked to allot $500,000 for the first of the fiscal years and $750,000 for the second to aid in the construction program.

While Alabama's and the nation's hospital and health center needs will not be entirely met by these two measures, it is believed that they will go far toward making adequate provision for those needs. If they are passed, as appears likely, there should be a conspicuous lifting of health levels throughout the country.

In summation it is emphasized that hospitals built under this proposed plan will be owned and operated by local governing bodies which will be responsible for their maintenance and provision for adequate staffs. It is reasonable to believe that modern hospital facilities in smaller communities will encourage qualified physicians to locate there and it will place hospital service within reach of all the people.

BUREAU OF LABORATORIES

Samuel R. Damon, Ph. D., Director

SPECIMENS EXAMINED

APRIL 1945

Examination for diphtheria bacilli and Vincent's	504
Agglutination tests (typhoid, Brill's, undulant fever)	600
Typhoid cultures (blood, feces and urine)	682
Examinations for malaria	719
Examinations for intestinal parasites	1,883
Serologic tests for syphilis (blood and spinal fluid)	28,198
Darkfield examinations	42
Examinations for gonococci	3,325
Examinations for tubercle bacilli	1,659
Examinations for Negri bodies (microscopic)	121
Water examinations	1,243
Milk examinations	1,893
Miscellaneous	1,754
Total	42,623

BUREAU OF PREVENTABLE DISEASES

D. G. Gill, M. D., Director

CURRENT MORBIDITY STATISTICS

1945

	Feb.	March	E. E.* March
Typhoid	6	6	6
Typhus	20	20	10
Malaria	113	144	81
Smallpox	0	0	2
Measles	56	59	1026
Scarlet fever	92	88	73
Whooping cough	61	88	133
Diphtheria	34	42	38
Influenza	781	741	1863
Mumps	230	259	266
Poliomyelitis	7	2	2
Encephalitis	1	0	1
Chickenpox	118	175	208
Tetanus	2	3	3
Tuberculosis	174	255	206
Pellagra	0	3	15
Meningitis	21	25	13
Pneumonia	430	428	682
Syphilis	733	1024	1655
Chancroid	13	12	10
Gonorrhea	475	574	343
Ophthalmia neonatorum	0	0	2
Trachoma	0	0	0
Tularemia	0	6	2
Undulant fever	6	10	3
Dengue	0	0	0
Amebic dysentery	2	6	0
Cancer	247	197	0
Rabies—Human cases	0	0	0
Positive animal heads	29	46	

	March	April	E. E.* April
Typhoid	6	5	6
Typhus	20	14	12
Malaria	144	303	102
Smallpox	0	0	1
Measles	59	73	788
Scarlet fever	88	70	53
Whooping cough	88	126	205
Diphtheria	42	34	34
Influenza	741	110	741
Mumps	259	207	284
Poliomyelitis	2	18	2
Encephalitis	0	2	2
Chickenpox	175	141	182
Tetanus	3	1	5
Tuberculosis	255	228	264
Pellagra	3	3	13
Meningitis	25	18	18
Pneumonia	428	234	509
Syphilis	1024	869	1585
Chancroid	12	6	8
Gonorrhea	574	520	382
Ophthalmia neonatorum	0	0	1
Trachoma	0	0	0
Tularemia	6	1	1
Undulant fever	10	8	2
Dengue	0	0	0
Amebic dysentery	6	8	0
Cancer	197	165	0
Rabies—Human cases	0	0	0
Positive animal heads	46	58	

As reported by physicians and including deaths not reported as cases.

*F. E.—The estimated expectancy represents the median incidence of the past nine years.

Poverty or the fear of poverty, more than any other single factor, changes the tides of battle in favor of the tubercle bacillus in the individual or in the family. Poverty engenders crowding, ignorance, nutritional deficiencies, and medical neglect; all of which create a favorable soil for the tubercle bacillus. The result is that benign infections become malignant, closed or sputum negative cases become open or sputum positive cases, the spread of germs becomes constant and massive, and cases multiply.—*Robert E. Plunkett, M. D., J. Connecticut M. Soc., Jan. '44.*

BUREAU OF VITAL STATISTICS

Miss Ethel R. Hawley, Acting Director

PROVISIONAL MORTALITY STATISTICS

REPORTED BIRTHS, STILLBIRTHS, DEATHS FROM CERTAIN IMPORTANT CAUSES AND RATES*—JANUARY 1945, 1944, 1943

Births, Stillbirths, and Causes of Death	Number of Deaths Registered—Jan. 1945			Rate (Annual Basis)		
	White	Colored	Total	1945	1944	1943
Births, exclusive of stillbirths	**	**	6206	25.2	27.0	26.7
Stillbirths	**	**	207	32.3	25.0	25.1
Deaths, exclusive of stillbirths	1451	967	2418	9.8	11.0	9.3
Infant deaths:						
Under one year	172	131	303	48.8	50.1	49.2
Under one month	107	70	177	28.5	27.8	30.4
Typhoid and paratyphoid, 1, 2					0.4	0.4
Epidemic cerebrospinal meningitis 6	2	2	4	1.6	4.4	3.2
Scarlet fever 8						
Whooping cough 9	3	3	6	2.4	2.4	3.2
Diphtheria 10	4	1	5	2.0	2.0	2.4
Tuberculosis, all forms 13-22	59	60	119	48.4	46.7	41.2
Malaria 28					0.4	0.4
Syphilis 30	5	15	20	8.1	10.8	10.8
Influenza 33	32	23	55	22.4	98.7	27.6
Measles 35					0.8	
Poliomyelitis 36						
Encephalitis 37						
Typhus fever 39	4		4	1.6	1.6	0.8
Cancer, all forms 45-55	143	39	182	74.0	70.3	65.5
Diabetes mellitus 61	23	7	30	12.2	15.2	12.0
Pellagra 69	3	2	5	2.0	4.8	4.4
Alcoholism 77	1	2	3	1.2	0.8	1.2
Intracranial lesions 83	132	102	234	95.2	85.9	82.3
Diseases of the heart 90-95	307	151	458	186.3	202.2	184.2
Diseases of the arteries 96-99	18	5	23	9.4	8.8	8.0
Bronchitis 106	2	3	5	2.0	2.8	0.8
Pneumonia, all forms 107-109	100	67	167	67.9	99.5	73.1
Diarrhea and enteritis (under two) 119	1	2	3	1.2	3.2	2.4
Diarrhea and enteritis (two and over) 120	1	1	2	0.8	1.2	2.0
Appendicitis 121	7	5	12	4.9	6.0	3.2
Hernia, intestinal obstruction 122	10	7	17	6.9	8.0	6.4
Cirrhosis of the liver 122	7	3	10	4.1	3.6	4.0
Nephritis, all forms 130-132	107	91	198	80.6	77.5	73.1
Diseases of the puerperal state 140-150	11	14	25	39.0	30.2	36.4
Puerperal septicemia 140, 142a, 147		4	4	6.2	8.6	10.2
Suicide 163-164	15	1	16	6.5	6.8	5.6
Homicide 165-168	7	13	20	8.1	6.0	10.8
Accidental deaths (exclusive of motor vehicle) 169 171-195	105	34	139	56.6	54.3	50.7
Motor vehicle 170	41	10	51	20.7	14.8	16.0
All other known causes	241	139	380	154.6	150.6	147.8
Ill defined and unknown causes 199-200	60	165	225	91.5	99.9	77.1

**Not available.

*Birth and death rates per 1,000 population; infant death rate per 1,000 live births; stillbirths per 1,000 total births (inclusive of stillbirths); from specific causes per 100,000 population; from puerperal causes, per 10,000 total births.

BUREAU OF SANITATION

T. H. Milford, M. S. in S. E., Director

CONTAMINATION OF PUBLIC WATER SUPPLIES BY CROSS CONNECTIONS AND BACK-SIPHONAGE

Contributed by

C. W. White

Associate Sanitary and Public Health Engineer

The contamination of a public water supply is regarded as one of the greatest hazards to the health of a community. The source of the supply is particularly important; however, to protect the water at the source alone is not sufficient. Every precaution should be taken to see that a safe water is delivered through the distribution system to the consumer's tap. The principal causes of contamination in the system have been found to be: (1) pollution of mains during construction or when repairs are made; (2) cross connections; and (3) backflows caused by reduced pressure within the system.

It is apparent that pollution will occur when new mains are installed or when a break in a pipe occurs in the system. When repairs or extensions are made to the system, all new pipes and the affected parts should be disinfected adequately with a strong chlorine solution before that part of the system is placed in service.

There should not be any physical or cross connections between a public supply system and a system containing water of questionable safety. In plants where it is desirable or necessary to have two or more water supplies, the systems should be entirely separated and the exposed sections of the pipes painted different colors—one color for each system. The painting of the pipes will reduce the probability of making cross connections by employees not familiar with the various piping layouts. Should one of the secondary systems (such as cooling, processing or fire protection) be supplied from the potable supply, a receiving tank should be constructed with an overhead inlet in order to separate the systems. The inlet should be sufficiently high above the overflow to prevent back-siphonage of the tank. In general, the least air gap distance required is twice the diameter of the inlet pipe.

It is recognized that no mechanical device is the equivalent of a broken connection or air gap between two systems; however, progress has been made in developing and designing protective devices to prevent backflow in drinking water systems such as vacuum breakers on plumbing fixtures. A double check valve system with vacuum breakers and pressure-differential relief valves has been designed and developed to prevent backflow in domestic water systems. Double check valves with other protective devices have been made in the past at a number of industrial plants in Alabama where it was necessary to install fire pumps to supply additional water from a secondary source. It is not the general policy to approve any systems with cross connections.

Reduction of pressure or the creation of partial vacuum (negative pressure) within a water system may cause back-siphonage resulting in pollution. Contaminated water may enter the potable water supply system as a result of back-siphonage through (a) direct connections between water and sewer lines; (b) flushometer valves without vacuum breakers; (c) common supply and waste lines for bath, kitchen and laundry equipment; or (d) submerged inlet to plumbing fixtures and industrial processing tanks. Other sources of contamination may be found upon inspections or extensive investigations.

The following conditions or combination of them may cause partial vacuum within a water system and result in pollution by backflow:

(a) Failure of water supply; main breaks; pump failures; power shut-off; shutdown for repairs.

(b) Shut-off of service connections and pipes for repair of plumbing within buildings.

(c) Low residual pressure caused by fire flows.

(d) Inadequate pipe sizes.

(e) Occurrence of water hammer.

Precaution should be taken to see that all regulations and standard plumbing practices are followed in installing plumbing fixtures, cooling systems, tanks for industrial processed water and many other types of equipment.

The importance of adequate plumbing regulations and the services of a qualified plumbing inspector in towns with public water supplies and no plumbing ordinances should be brought to the attention of mu-

nicipal officials so that appropriate action can be taken.

Through an organized effort on the part of water works and plumbing department officials, the general pollution in the system caused by cross connections and back-siphonage can be greatly reduced or entirely eliminated. The engineers with the State Department of Health will gladly discuss plans and procedures with interested officials and give all possible aid in cleaning up the cross-connection situation in towns and cities of Alabama.

BOOK ABSTRACTS AND REVIEWS

Approved Laboratory Technic. By John A. Kolmer, M. S., M. D., Dr. P. H., Sc. D., LL.D., L. H. D., F. A. C. P., Professor of Medicine in the School of Medicine and the School of Dentistry, Temple University; Director of The Research Institute of Cutaneous Medicine; Formerly Professor of Pathology and Bacteriology, Graduate School of Medicine, University of Pennsylvania; and Fred Boerner, V. M. D., Associate Professor of Clinical Bacteriology, Graduate School of Medicine and Assistant Professor of Bacteriology, School of Medicine, University of Pennsylvania; Bacteriologist, Graduate Hospital, Philadelphia. Fourth edition. Cloth. Price, $10.00. Pp. 1088. New York: D. Appleton-Century Company, 1945.

To review an encyclopedia is an impossibility and, to say the least, this book borders on the encyclopedic. Suffice it to say that this fourth edition has been very considerably revised, largely rewritten and greatly enlarged due to the inclusion of newer methods and illustrations. Use of a new format and type is in line with emergency conservation measures but new sections on methods for examinations of saliva, pancreas function tests, examinations of the blood and urine for hormones and vitamins as well as virologic examinations are included. A new section on parasitologic examinations has been added. The section on skin tests now includes immunologic skin tests and also allergic skin tests of value in the diagnosis of bacterial and mycologic diseases, lymphopathia venereum, and diseases due to animal parasites. Other additions of equal importance are too numerous to mention and the list of collaborators on special subjects is extensive.

In a book occupying the outstanding position that this one enjoys, it is somewhat disconcerting to find statements such as the following:

1. P. 436, "a *positive* report (for gonorrhea) may be rendered when smears show large numbers of pus cells with gram-positive intracellular diplococci."

2. P. 444, "*B. subtilis* . . . *rapidly liquefies* . . . Loeffler's blood serum."

3. P. 445, referring to diphtheria bacilli in smear preparations, "they do not occur in palisade formation . . . as a rule"; likewise, the "*mitis* (type is) associated with mild diphtheria, *gravis* with severe fulminating diphtheria."

4. P. 459, in discussing Brucella, host specificity is implied by the statement, "*Brucella melitensis* infects goats; *Brucella abortus* infects cows and *Brucella suis* infects hogs."

5. P. 510, discussing the presumptive test in the bacteriologic analysis of water, "the production within 24 hours of gas occupying more than 10 per cent of the inverted vial in fermentation tube constitutes a positive presumptive test," and "if the gas formed is less than 10 per cent, the incubation shall be continued to 48 hours."

6. P. 599, speaking of malaria infection and the occurrence of two or more parasites in the same (blood) cell, "this is rarely or never seen in either *P. vivax* or *P. malariae*."

To multiply such citations is but to labor the point. Suffice it to say they are either absolutely incorrect or at most only partially true. In the minds of experienced workers, they will do no harm other than to be exasperating but in the minds of the less critical they can give rise to absolutely erroneous understanding.

In spite of errors such as those cited, the book is highly useful to the laboratory worker.

S. R. Damon.

Doctors at War. Edited by Morris Fishbein, M. D., Editor of The Journal of the American Medical Association and Hygeia; Chief Editor of War Medicine and Chairman of the Committee on Information of the Division of Medical Sciences of the National Research Council. Contributors: Major General Norman T. Kirk, Surgeon General of the Army, Vice Admiral Ross T. McIntire, Surgeon General of the Navy, Thomas Parran, M. D., Surgeon General of the U. S. Public Health Service, and others. Cloth. Price, $5.00. Pp. 418. Illustrated with 82 photographs and numerous charts. New York: E. P. Dutton & Company, Inc., 1945.

The doughboy's part in the war has been recounted by any number of writers since that heart-breaking first Sunday in December 1941, and so have been the parts played by the war correspondents, the airmen, the groundcrewmen, the diplomatists, the engineers, the Seabees, and many others who have made, and are still making, their contribution to victory. And now, at long last, we have the war story of the men and women of medicine. Such a story is inevitably an inspiring one, rivaling the others in its appeal to the emotions and second to few of them in its sense of the dramatic.

This is of course not altogether the story of the doctors in the fighting zones, although naturally the front-liners and those who perform miracles of life-saving within sight and sound of the fighting come in for a major share of attention. There is a place for the work of the U. S. Public Health Service in protecting the nation's health on the home front, especially against the venereal diseases, tuberculosis, industrial diseases, malaria, blindness, the rat-borne diseases and those hard-to-define mental conditions which afflict mer-

chant seamen who have carried their ships and cargoes through infernoes of bombings and torpedoing to their destinations. And the physician "carrying on" on the home civilian front receives his measure of praise.

But primarily this is the story of the doctors actually attending the fighting men. It tells of the medical side of Selective Service, the Army doctors on the job, the Navy doctor at sea and on shore stations, and the doctor whose work is among the soldiers and sailors who have taken off their uniforms and now wear pajamas and—in a tragically large number of cases—braces, artificial limbs and science's best substitutes for eyes, ears and jaws.

There are personal touches which enliven the work and give it flashes of human interest, emphasizing that men in bombers, tanks and marching boots are still the youngsters from the old home town at heart and not fighting machines, notwithstanding the vast array of machinery which they command in their work of killing the enemy.

Unfortunately, Doctors at War is not entirely beyond the sort of criticism which proved embarrassing to Caesar's wife. In these days of maddening difficulties and delays in publishing, as well as in practically everything else, perhaps it is churlish to call the author of the chapter on the Veterans Administration, for instance, to task for being several months behind with some of his facts and figures. But, even under the present difficult publishing conditions, it would not seem unreasonable to expect a book with a May 11 publication date to bring its information fairly up to date. The reviewer has particular reference to the statement: "Disability pension payments (for service-connected disabilities) ordinarily range from $10 to $100 monthly, in multiples of 10, dependent upon the relative degree of disability as determined from a schedule of ratings." These payments were temporarily increased by 15 per cent in June of last year, certainly long enough ago for the fact to be mentioned in this book, and the increases are to continue through the present war. Nor would it appear unreasonable to expect some mention in this section of the fact that widows and dependent children of World War I veterans (except those having substantial incomes) have been entitled to pensions since last December, regardless of whether the veterans had service-connected disabilities or not.

But such lapses do not materially affect the value of Doctors at War as a substantial and inspiring contribution to the literature of these stirring but tragic times. Professional brothers and sisters of the men and women whose achievements crowd its pages will find in it much to thrill and please them.

J. M. Gibson.

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THE JOURNAL OF THE MEDICAL ASSOCIATION OF THE STATE OF ALABAMA

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July 1944-June 1945

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Miscellany

NEW DRUG HOLDS PROMISE IN TREATMENT OF TYPHOID FEVER

A promising new drug, related to penicillin in its germ-killing power, has been found useful in the treatment of typhoid—a disease for which heretofore there has not been a treatment of any value, it is reported in The Journal of the American Medical Association for May 19.

Hobart A. Reimann, M. D., William F. Elias, Ph. D., and Alison H. Price, M. D., Philadelphia, studied effects of the drug during a local typhoid epidemic in December 1944. About 60 cases with 8 deaths were reported during the epidemic, all of them arising from a typhoid carrier in a bakery. Because amounts of the drug were limited, only 5 patients were selected for treatment and study.

The drug, streptomycin, is a nontoxic substance which, like penicillin, has an inhibiting or destroying action upon bacterial growth. It acts, however, upon some disease producing bacilli on which penicillin has no effect, including Eberthella typhosa, the microbe which causes typhoid.

Of the 5 patients treated by hypodermic injection with streptomycin, recovery took place in 3 during treatment. The authors point out that different strains of this germ vary in their resistance to streptomycin. This may explain why not all of the patients responded to the new treatment.

HEREDITY PLAYS A BIG PART IN PERSON'S RATE OF AGING

DR. IVY SAYS DIFFICULTY OF VISION ONE OF EARLIEST SIGNS IN GROWING OLD; EXPLAINS BLOOD VESSEL CHANGES

Why do people grow old?

Dr. A. C. Ivy, professor of physiology at Northwestern University Medical School, provides the answer in an article appearing in the June issue of Hygeia, The Health Magazine.

"To a considerable degree, we inherit the length of our natural life," he says, adding: "The results of studies by experts indicate that heredity is a factor which determines the length of life and presumably the rate of aging. But, fortunately, heredity is not the only factor which influences the rate of growing old. Environment is important, too. . . ."

Continuing Dr. Ivy said in part:

"In time, biologists may discover how heredity operates to cause one to grow old, and how to retard the rate of growing old. Even though at present we do not know how heredity operates to cause aging, we do know considerable about the changes which cause or are associated with the symptoms of aging.

"The earliest sign of aging occurs frequently in difficulty of vision. This is one of the earliest symptoms, due to a loss of resiliency in the lens of the eye. This loss of resiliency—that is, the ability to spring back, or to make adjustments quickly—becomes evident later in many tissues of the body. Blood vessels lose the elasticity of youth. The skin of an elderly person, if pinched, is slow to return to its former position. Joints and muscles become stiff.

"Other change in the blood vessels is also to be expected. Fatty materials and lime salts are likely to be deposited in the blood vessels of older persons. They may result in high blood pressure and fragility of the blood vessel wall both of which may and often do result in rupture of the wall. If this occurs in the brain or brain stem, it leads to various forms of paralysis and death. Or if these fatty or lime deposits lead to narrowing of the blood vessels through which nutritive materials and oxygen are supplied to the heart muscle, blood in these vessels may clot, causing the sudden death

so common at the present time—coronary thrombosis.

"Often we hear of older persons who live alone, and who become ill because they fail to eat. With oncoming years, as a result of these changes which occur, the empty stomach becomes less active, and the person does not experience the sensation of hunger. Thus he fails to eat an adequate amount of food. These same causes may also interfere with proper digestion and absorption of that which is eaten. All this results in lowered general health . . .

"The life records of 2,000 people who lived ninety years or longer were studied by Dr. Raymond Pearl. Besides heredity, the only outstanding trait found in these people was that the vast majority were of placid temperament, not given to worry. Whether worry actually shortens life or not, it is certain that old age may be made happier if one's state of mind is serene, and if one remains active in many interests. To grow old is natural and inevitable . . ."

PHYSICIAN TELLS HOW HIGH BLOOD PRESSURE SHORTENS LIFE

Persons suffering from continuous high blood pressure face a shortened life because of the terrific strain imposed on the heart and blood vessels, says Dr. Nathan S. Davis III, assistant Professor of Medicine at Northwestern University Medical School, in the June issue of Hygeia, The Health Magazine.

"While the results of low blood pressure are not so drastic," he says, "this condition can rob life of much of its joy, since the person suffering from low blood pressure lacks vitality and experiences weakness, fainting and continual fatigue.

"Of course, everybody's blood pressure rises now and then. In moments of extraordinary physical exertion, or in such emotional crises as fear, anger or grief, it is natural for the heart to beat more quickly, pumping more blood through the body. This is Nature's device for providing us with the additional vitality we need in emergency or danger. No harm is done if the necessity is of short duration. But if it continues—if a person persists in worrying, or is driven by fear over a long period of time—high blood pressure may result from this purely emotional cause. Overexertion, mental or physical, which continues for a sufficient length of time, is one of the most common causes of high blood pressure."

Dr. Davis said there were many symptoms of high blood pressure, but the most common are those due to inability of the heart to maintain adequate circulation: breathlessness or pain in the chest on exertion, lack of endurance and easy fatigue, gaseous distension of the abdomen, throbbing headaches.

Dr. Davis believes that periodic health examinations are the best insurance in detecting high blood pressure in its earliest stages. "Only through them," he says, "will the rising blood pressure be spotted while changes are still reversible."

USE NEW METHOD TO TREAT MIGRAINE

A new method for the treatment of migraine headaches by injections of a substance known as histamine is suggested from preliminary observations reported in The Journal of the American Medical Association for May 19.

Stuyvesant Butler, M. D., and William A. Thomas, M. D., of Chicago, who make the report, state that 34 patients with severe migraine were treated with histamine injected into a vein. Investigators had previously reported the administration of histamine by injection into a muscle without outstanding success. Dr. Butler and Dr. Thomas chose patients who could not conceivably have headaches from any other cause, such as sinusitis, eye-strain, neuralgia of the face or scalp, skull injury or brain tumors. Of the 34 patients, 24 became symptom free and 7 were improved.

The doctors caution, however, against the indiscriminate use of histamine. It is particularly dangerous if given to patients with peptic ulcer or high blood pressure.

One patient, a woman aged 32, suffered from very severe headaches, during which her speech was indistinct. Morphine injections often gave no relief. She was given three injections of histamine into a vein. Mild headache and heartburn was experienced during the first injection. She has had no return of headache for fourteen months.

ARMY DOCTORS IN WAR ZONES TO GET ASSIGNMENTS IN U. S.

KIRK SAYS OFFICERS RELIEVED FROM DUTY ABROAD WILL REPLACE MEN WHO HAVE NOT SEEN FOREIGN SERVICE

Major General Norman T. Kirk, Surgeon General of the U. S. Army, in a message appearing in the May 19 issue of The Journal of the American Medical Association, says that it will be the policy of the Army Medical Department to bring back to the United States medical officers relieved from service in the theaters of operations and to assign them on their return, as long as needed, to service in their specialties in American hospitals and other installations. These men will replace physicians with similar qualifications who have not had an opportunity for foreign service.

"This information," The Journal says editorially, "will answer the questions of many medical officers, some of whom have written and telegraphed to the headquarters of the American Medical Association asking for a definite statement on this subject." Continuing, The Journal's editorial says:

"Many physicians have also written to the American Medical Association protesting against the possibility that they may be assigned on their release from service with the armed forces to the Veterans Administration. These letters were brought before the Committee on Postwar Medical Service at its meeting in Chicago May 12. That committee took prompt action, adopting the following statement, which was sent to the Secretary of War, Secretary of the Navy and the Committees on Military Affairs of the House of Representatives and the Senate:

" 'In November 1944 the Army Medical Department was directed to transfer at least 300 medical corps officers to the Veterans Administration, this number to include those officers in the zone of the interior who were formerly employed by the Veterans Administration as civilians. Apparently about 100 men meeting the latter classification were so assigned and in addition some 200 others selected largely from among men who had been marked "limited service." Many of those thus assigned have protested and others are now protesting bitterly against these assignments on the ground that their enlistment was distinctly for military service and that assignment to the Veterans Administration cannot be thus characterized. Many physicians who have served with distinction in both the European and the Pacific theaters of operation are now indicating by communications addressed to the headquarters of the American Medical Association the fear that they may be assigned on their return to the United States to service with the Veterans Administration. The unwillingness to serve with the Veterans Administration is based not only on their belief that this cannot be considered military service but also on the point of view that competent, scientific medical care is difficult under the conditions that prevail in the veterans' hospitals.

" 'The Committee on Postwar Medical Service, which includes representatives of the American Medical Association, the American College of Surgeons, the American College of Physicians, the American Hospital Association, the Federation of State Medical Licensing Boards, the Association of American Medical Colleges, the Catholic Hospital Association, the Advisory Board for Medical Specialties and many other groups, after careful consideration of the problems involved urges that the Secretary of War, the Secretary of the Navy and all others concerned with the activities of physicians voluntarily enlisted in the armed forces recognize the righteousness of the protests made by these medical officers against assignment to the Veterans Administration. It is further urged that the needs of the Veterans Administration for physicians be met either by voluntary enrollment of men in the armed forces at the time of their release from the service or by recruitment of medical personnel from civilian sources.'

"The American Medical Association—and this statement is made wholly in explanation of a fact that should be obvious to every one—does not have authority to determine in any way the assignments of physicians in the armed forces. The officers of the Association would be hesitant to interfere in the making of decisions as to the assignments or transfer of men in the armed forces. The decisions as to how military personnel are to be utilized must rest with those who carry the responsibility for the ultimate results. This statement is made because many a medical officer has written to the headquarters of the American Medical Association actually demanding that the Association exert its influence to determine the decisions, not only of those responsible for the medical departments of the armed forces, but even of the Secretaries of War and Navy, of the Committees on Military Affairs of the legislative bodies and even of the President. The Board of Trustees and the officers of the Association have felt keenly, nevertheless, the responsibility that rests on them to present to those in authority the facts that should be given serious consideration in the making of decisions."

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